

SEATTLE PORT COMMISSION
DEPARTMENT OF PLANNING
AND INDUSTRIAL DEVELOPMENT

J. Kenneth King, Director
V. A. Breindl, Research Economist

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and Industrial Development.*

SEATTLE-TACOMA INTERNATIONAL AIRPORT
AND ITS IMPACT UPON
THE ECONOMY OF KING COUNTY

1962

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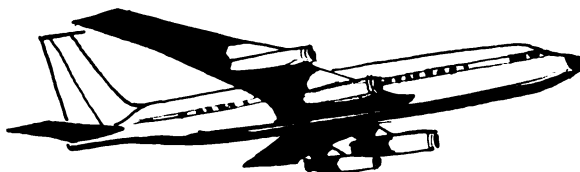
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PREFACE

Jet airliners streaking through the sky at 600 miles an hour had become a common sight in Seattle long before they appeared in other parts of the country.

The spectacular success of the Boeing 707 elevated Seattle to the "Jet Capital" of the world.



Every third person in the Seattle area depends for livelihood on the aircraft and associated industries.

Yet, only about one person in six or seven has ever taken a trip in a commercial airliner, and though these sleek birds thrill them, Seattleites view the jets with somewhat detached attitude, hardly realizing how commercial air transportation affects their daily life.

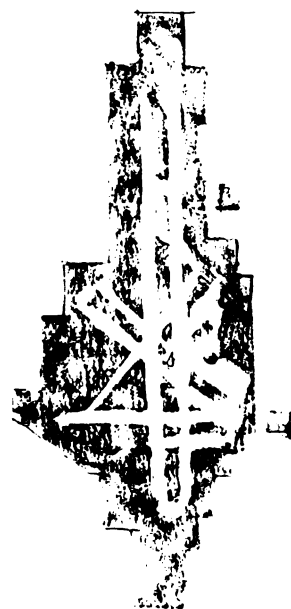
Even among the knowledgeable, the opinion has prevailed that the significance of the Seattle-Tacoma International Airport was limited to some 3,000 jobs available on its premises.

The Port of Seattle Planning Department conducted a year long study, the primary aim of which was to trace the effects of the airborne traffic of the Seattle-Tacoma International Airport within King County and to factually evaluate the impact which this traffic produces upon the economic life of the owners of the airport, the citizens of the Seattle Port District.

Whenever possible, the Planning Department based the report on primary sources of information. It interviewed more than 400 executives of the airlines, public agencies, and private companies which render services to the airlines, consumer services to the air travelers, and firms engaged in commercial and manufacturing activities in the Seattle area. The Planning Department acknowledges with gratitude the invaluable assistance received.

The report is based on several individual studies, drafts of which are available for inspection in the files of the Planning Department.

SUMMARY AND CONCLUSIONS



SUMMARY AND CONCLUSIONS



Seattle Port Commission should be given full credit for the fact that among the Pacific Northwest cities it is Seattle which has been endowed with an international airport of first magnitude and worldwide importance.

To date, the Port of Seattle has expended \$13,400,000 of its surpluses and of King County taxpayers money for the acquisition of land, and for the construction of runways, buildings and other facilities enabling smooth and efficient functioning of the airport. In its efforts, the Port of Seattle has been supported by the Federal Aviation Agency, whose grants in aid have reached the sum of \$9,600,000 by the end of 1961.

Seattle-Tacoma International Airport became fully operational with the inauguration of the Administration Building in July 1949, and by 1950, it had already accounted for 86 percent of the total commercial air passenger traffic of the Seattle region.

From 1950 to 1961 Seattle-Tacoma International Airport traffic has increased as follows:

	<u>1950</u>	<u>1961</u>
Revenue Passengers	540,927	1,619,745
Airmail (short tons)	3,138	14,582
Air Express (short tons)	1,325	1,754
Air Freight (short tons)	6,234	22,465

Percent of Increase
1961 over 1950

Revenue Passengers	199.4
Airmail	364.7
Air Express	32.4
Air Freight	260.4

Passenger travel to cities located along the Pacific Coast from San Diego, California to Anchorage, Alaska, accounted for 57 percent of the Seattle-Tacoma International Airport's outbound traffic in 1960. Less than 24 percent of the outbound passengers traveled east of the 105th meridian which intersects Denver, Colorado. Of the 831,000 outbound passengers of the Seattle-Tacoma International Airport, 740,000 corresponded to the domestic traffic and 91,000 to the foreign traffic. An overwhelming share in the foreign traffic was borne by Canada, almost 80,000 passengers having flown to Vancouver and Victoria, B. C. On the first leg of their outbound trips, the Seattle-Tacoma International Airport's travelers covered close to one billion passenger miles in 1960.

The Seattle-Tacoma International Airport's air freight traffic with Alaska accounted for 36 percent of the airport's total air freight tonnage in 1960. An equal percentage of the tonnage corresponded to the air freight originating in or destined to the northeast segment of the United States. The leading commodity group in the air freight, "Machinery and Vehicles", accounted for 33 percent of the combined tonnages and 80 percent of the total value. It is estimated that the air freight enplaned at the Seattle-Tacoma International Airport in

1960 logged some 20,000,000 ton miles. The combined value of the 1960 in- and outbound air freight and air express totaled \$300,000,000.

As to the number of enplaned revenue passengers, passenger miles flown, ton miles logged by the outbound airmail and air cargo, and finally, as to the number of Seattle based airline personnel, the Seattle-Tacoma International Airport presently accounts for about 3 percent of the total national traffic.

The future growth of the Seattle-Tacoma International Airport's air passenger traffic will not keep pace with the rapid expansion experienced from the opening of the airport until 1957. However, the future holds big promises in airmail transportation, and spectacular gains are forecast for air freight due to the heralded "explosion in air cargo".

The Planning Department makes the following forecast of the Seattle-Tacoma International Airport's airborne traffic:

	<u>1970</u>	<u>1980</u>
Air Passengers	2,620,000	3,600,000
Airmail (short tons)	23,500	33,000
Air Express (short tons)	2,400	3,400
Air Freight (short tons)	160,000	280,000

Expressed in percentages, this future growth means the following:

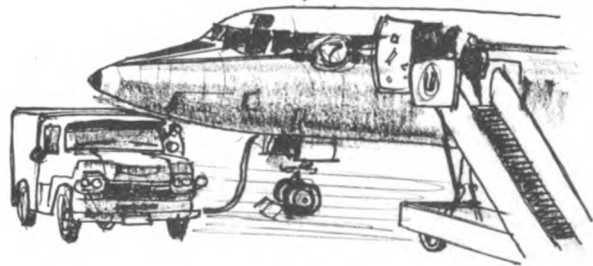
Percent of Increase
over 1961

	<u>1970</u>	<u>1980</u>
Air Passengers	61.8	122.2
Airmail	61.1	126.3
Air Express	36.8	93.8
Air Freight	612.2	1,146.4

The primary economic impact of the Seattle-Tacoma International Airport 1961 airborne traffic resulted in 6,010 jobs directly attributable to the air transportation of the field. The jobs earned an annual gross payroll of \$40,319,000. The average earning per job was \$6,708, compared with \$5,956, in the Seattle maritime transportation. The business generated by the primary impact of the Seattle-Tacoma International Airport amounted to \$133,000,000. This means that each commercial airliner landing on a scheduled flight at the Seattle-Tacoma International Airport, brought more than \$800 in payrolls and \$2,700 in business to the community.

The citizens of King County, who own the Seattle-Tacoma International Airport, have achieved an excellent rate of return on their investment in the airport. The annual payrolls directly attributable to the airborne traffic of the Seattle-Tacoma International Airport were three times higher than the total investment, the business volume ten times higher.

In view of the steadily growing importance of commercial air transportation, it is expected that the primary



economic impact of the Seattle-Tacoma International Airport will encompass some 9,000 jobs in 1970, and at least 12,000 in 1980.

The following items are of special significance, and would enhance the economic impact produced by the airborne traffic of the Seattle-Tacoma International Airport:

1. **Air Carriers** operating at the Seattle-Tacoma International Airport could possibly be persuaded to transfer to Seattle their maintenance bases or at least to substantially expand their Seattle maintenance facilities. The increasing number of Boeing jet aircraft used by these carriers is a favorable factor in this respect. By having their repair bases in the same city as the airplane manufacturer, the airlines would obviate many costly delays and problems.
2. In view of a possible rapid expansion of the air freight, utmost attention should be paid to the construction of a new extensive air freight terminal.
3. **Air freight oriented industries and commerce** should be fostered through the opening of industrial sites situated close to the airport.

FOREWORD

Some 30,000 King County residents -- men, women and children -- depended for their livelihood upon the airborne traffic of the Seattle-Tacoma International Airport in 1961.

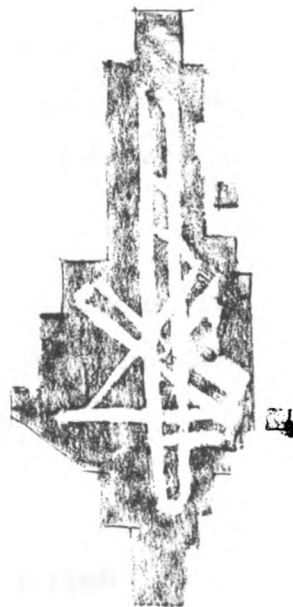
The ensuing report explains how this conclusion was reached. The report is divided into three parts:

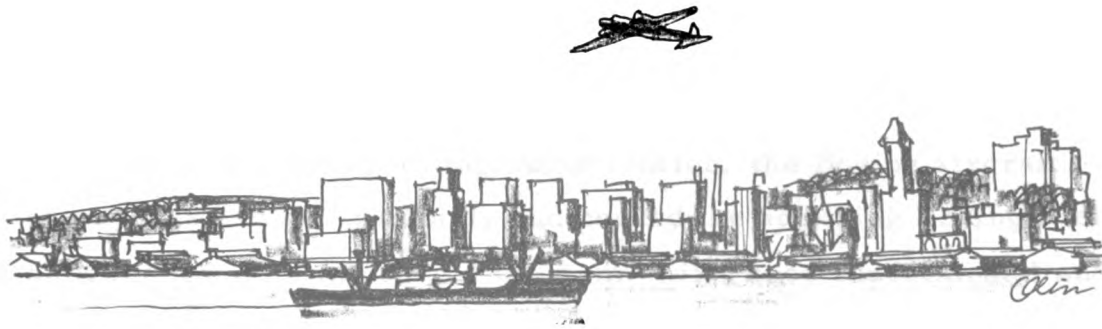
Chapter 1 presents the history of the Seattle-Tacoma International Airport since its inception in 1942. An outline of the history was deemed indispensable for a better understanding of the part which the Seattle Port Commission has played in the development of the Seattle-Tacoma International Airport.

Chapter 2 analyzes the airborne traffic of the Seattle-Tacoma International Airport and forecasts future trends up to the year 1980.

Finally, Chapter 3 describes the economic impact proper.

Chapter 1
HISTORY OF THE AIRPORT





Twenty years ago, almost to the day, Port of Seattle Commissioners performed an unusual wedding ceremony. They united the oceans of sea and air by taking upon themselves the added task of providing the Pacific Northwest with an international airport of first magnitude.

In the early forties, Seattle, like most of the nation's air-minded communities, was suffering from an acute case of "airportitis". Airliners carrying passengers and cargo eased carefully into Boeing Field, a landing strip built by King County in 1928 on drained land, close to sea level, where the Duwamish River flows into Puget Sound. If fog settled anywhere in the area, it could be counted on to sulk at the crowded Boeing Field. At that time, the airport was not considered adaptable for instrument landings because of meteorological conditions and surrounding natural and man-made hazards.

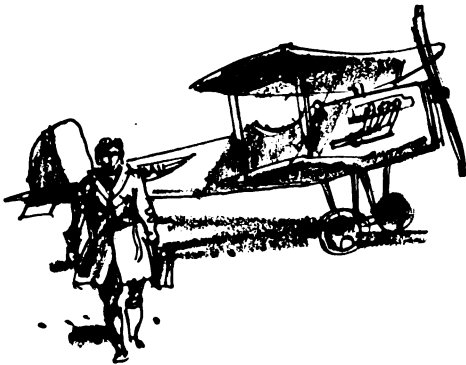
The volume of commercial air traffic was increasing. As airplanes grew faster, larger areas were needed to accommodate them.

Sources: Seattle-Tacoma International Airport:
Reports on Operations, 1953-1960
Donald G. Shay, Manager, Airport Department:
Seattle-Tacoma International Airport
Sundry newspaper and magazine reports and articles

In view of the growing world tension, the Boeing aircraft factory was expanding rapidly and needed the adjoining Boeing Field facilities for its own use and for Army Air Force experimental and technical purposes.

As early as January 1941, the Aviation Committee of the Seattle Chamber of Commerce conceived the idea of another major airport for Seattle, and immediately started surveying possible sites. The community efforts to secure a new airport for Seattle received a substantial boost when, a year later, the Civil Aeronautics Administration announced that it had one million dollars available for such an airport, provided some public agency would come forward with enough land in a good location, erect an administration building and be ready to run the airport upon its completion.

It should be stressed at this point that the Civil Aeronautics Administration previously had made similar offers, limited in time, to the cities of Tacoma and Vancouver, Washington. These cities delayed decision and forfeited the grants.



King County, which operated Boeing Field, declined the offer of the Civil Aeronautics Administration to participate in this venture. The City of Seattle, which had operated the first Seattle aviation field at Sand

Point Naval Station from 1920 to 1930 found itself counted out by a provision of the City Charter which prevented municipality investment in a project outside of the city limits.

It was under these circumstances that the Port of Seattle Commission was requested to assume the sponsorship in 1942.

After three decades of waterfront development and operation, the Port of Seattle's business position was enviable. It had acquired a major portion of the berthing space on the Elliott Bay. The Port of Seattle owned property valued in excess of \$30,000,000 and grossed about \$2,500,000 a year revenue. The Navy had just condemned the Smith Cove Terminal, two half-mile long piers developed by the Port of Seattle, and paid the Port more than \$4,000,000 indemnity.

The Port Commission was ready to sponsor the new airport even though it knew that the project would mean a financial burden. Since the major airports in the nation were operating in the red at that time, the Commission wanted to be certain that such a move was what the residents of the Port District wished. This assurance was given to the Port at a mass meeting of the Seattle Chamber of Commerce on March 2, 1942, attended by about 100 representatives of business, labor, service and community clubs. Five days later, in a formal meeting, the Commission unanimously voted to assume responsibility for the construction of a new airport.

At the time of the Commission decision, the search for the new airport location had been narrowed down to two sites:

One site was located west of Lake Sammamish and north of U. S. Highway 10, approximately in the area of the present Lake Hills residential development. There were seven buildings on the site and it was estimated that roughly 2,000,000 cubic yards of earth would have to be moved to grade the terrain.

The other site stretched west of Bow Lake on a cluster of wooded hills situated 15 miles south of Seattle city center and 17 miles north of Tacoma. The terrain was rugged. There were 55 buildings in the area, which had to be acquired, and a movement of 4,000,000 cubic yards of earth was expected.

Even though the Lake Sammamish site offered time and money saving advantages, by March 30, 1942, the Port of Seattle had already decided in favor of the Bow Lake site. Principal reasons for this decision were:

Bow Lake site was situated 400 feet above sea level and offered maximum clear weather in the area.

About 10 miles southeast of Lake Sammamish, Squak Mountain rises sharply to 1,980 feet. This mountain would have presented a hazard during instrument weather when low flying was necessitated and it also caused a deflection in the leg of the Seattle radio range, which would have to be used for instrument let down and approaches to the site.

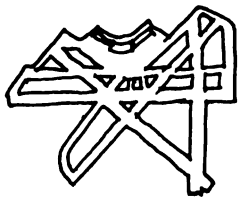
Two major airlines, United Air Lines and Northwest Air Lines, strongly favored the Bow Lake site, mainly from the passenger generating point of view. They were counting on the flow of passengers from the southern Puget Sound counties. The Bow Lake site was 20 miles closer to these counties than the Lake Sammamish area. The two airlines offered to advance \$25,000 yearly in rent until the completion of the airport if the Bow Lake site were chosen.

Tacoma offered a contribution of \$100,000 if Bow Lake site were selected and the field called Seattle-Tacoma Airport. Of the \$100,000, Port of Tacoma allotted \$70,000; the City of Tacoma and Pierce County, \$15,000 each. No strings were attached to the offer and the Port of Seattle was to maintain full managerial authority over the airport.

The acquisition of the land from 260 individual owners proceeded smoothly. The settlements made by the Port of Seattle were so

reasonable that only 4 owners contested the action. Altogether 906 acres were acquired in the first land purchase at a total cost of \$660,000.

The contract for the grading of the airfield was awarded on December 16, 1942, and the ground was officially broken on January 2, 1943.



It was felt by the designers of the Seattle-Tacoma International Airport that a 45 degree parallel runway plan was the best suited to the needs and location of the airport. A 45 degree parallel runway pattern had in its initial stage four runways affording eight possible directions for landing or take-off. The main runway was the north-south runway. This runway was originally 6,100 feet long and was expected to handle most of the normal traffic. In addition, it would handle all instrument operations if the approach channel was from the south. The area at the north end of the runway was cleared and graded so that another 1,000 feet of runway could be added when the need arose. The northeast-southwest runway had a length of 5,636 feet and the northwest-southeast runway a length of 5,082 feet. In addition, the airfield was provided with an east-west runway 5,000 feet long. All runways were 150 feet wide. The loading apron was designed to have eight plane parking positions, each 150 feet in diameter, served by eight loading gates.

Part of the Bow Lake Site was covered with heavy underbrush, orchards and numerous old growth fir stumps up to 60 inches in diameter. The top soil was found to be a brown material, about 12 inches deep in most spots, mixed with small gravel and occasional

boulders. This top soil was covering a deep bed of fine gray, sharp glacial sand, which was extremely hard on the rubber tires of the excavating equipment. Due to the uniform size of the particles, the glacial sand was not considered to be a satisfactory, stable material for the underslab fill, so it was excavated and replaced by about a foot of selected sand and gravel obtained from the project area.



In the beginning of the grading operations, the contractors were working on a schedule of six days per week, with two eight hour shifts per day. The schedule lasted until March 7, 1943, when they changed to 7 days a week and 2 nine-hour shifts per day. This schedule was very exhausting and finally on May 17, 1943, the contractors went back to a six day week, but this time with two ten hour shifts per day. Work continued on this basis until it was completed in October 1944.

The approximate quantities involved in the contracts were: 450,000 square yards of concrete runways, taxiways and aprons; 14 miles of underground pipe drains; 28,600 feet of underground electrical ducts; 62,500 yards of excavation of open drainage ditches and underground drains; 6,500,000 cubic yards of general excavation. At the peak of operations a total of 32,000 cubic yards of sand and hardpan were removed per 20 hour work day.

The grading and paving of the field was completed in the first days of October 1944, at an expenditure of \$4,319,000, the entire amount being disbursed by the Civil Aeronautics Administration.

On October 31, 1944, a United Airlines Mainliner -- DC-3 carrying a host of dignitaries -- took off from Boeing Field and made the first official landing at Seattle-Tacoma International Airport.

Seven months later, on May 31, 1945, the airport was used for an inaugural transcontinental flight of Northwest Airlines. The coast-to-coast flight in a DC-3 took 17 hours.

The first airline to build its hangar and regional headquarters at Seattle-Tacoma International Airport was Northwest Airlines. The hangar was located in the southeast section of the airport. The initial cost of the hangar was \$1,200,000. The structure was put into use on September 1, 1947, which marked the opening of regular scheduled commercial air traffic from Seattle-Tacoma International Airport by Northwest. Northwest Airlines was joined by Western Airlines, which resumed its service in this area on the same day after 18 years absence from Seattle. Temporary passenger service facilities for both air carriers were set up in the Port of Seattle temporary administration structure located north of the new hangar.



In October 1947, the Port Commission appointed the first manager of the airport, and on the same day, Seattle's bid for dominance in the Pacific Northwest as a major port for international and domestic air travel was implemented with the awarding of contracts for the construction of Seattle-Tacoma International Airport's permanent Administration Building.

Designed by the Port of Seattle Engineering Department, the Administration Building represented a compromise solution between

a "unit" terminal and a "centralized" terminal. It allowed the airlines to retain their individuality and, at the same time, prevented a costly duplication of service facilities.

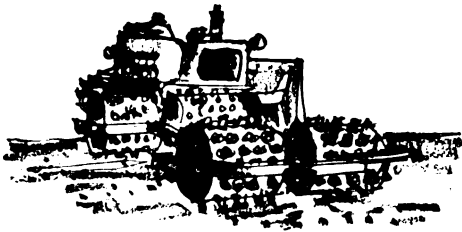
The original structure of convex layout consisted of a five-story central section, with two-story control tower on top, and was flanked by two wings, which swept back at a 45 degree angle. The central section of the building measured 480 feet by 140 feet and the wings 160 feet by 16 feet each. The building had a total area of 243,000 square feet and provided space for the airline traffic operations, Port of Seattle, Federal Agencies, concessions, and areas for the general public, including an observation deck.

The construction of the Administration Building started in the second half of October 1947, and the formal dedication and opening ceremonies took place on July 9, 1949, in the presence of about 30,000 of the Pacific Northwest populace. The cost of the Administration Building and other improvements carried out during the 1947-1949 period ran into almost four million dollars.

July 9, 1949, was the moving day for United Air Lines to Seattle-Tacoma International Airport. This air carrier has served Seattle continuously since 1926, first from Sand Point Air Field, and later from Boeing Field. Construction of a \$1,000,000 United Air Lines hangar, northeast of the Administration Building, was nearing its completion at that time. Another event of July 9, 1949 was the christening of Northwest Airlines' first Boeing Stratocruiser.

The construction lull which prevailed at Seattle-Tacoma International Airport from 1944 to 1947, appears to have been quite

an isolated phenomenon in the annals of the airport. With the raising of the Administration Building, a seemingly never ending era of progress and improvement set in, which has been marked by the following principal events:



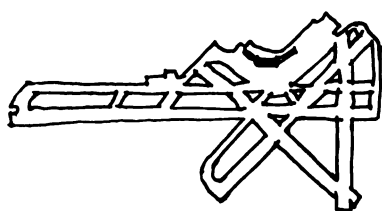
Extension of the north-south runway from 6,100 feet to 7,500 feet, including an additional 900 feet of graded, compacted over-run. Simultaneous widening of the existing taxiways from 50 to 75 feet. The work started in April 1950, cost an approximate \$700,000, and was completed by the year's end.

In August, 1951, two more airlines transferred their operations from Boeing Field to Seattle-Tacoma International Airport: Trans-Canada Air Lines on the 1st, and Alaska Airlines on the 18th.

The original 6,100 feet of the north-south runway were resurfaced with a three-inch thick layer of asphaltic concrete. This revitalization of the runway was carried out in 1952 at a cost of \$165,000. Originally designed for aircraft weighing not more than 27,000 pounds, the runway was required to accommodate airplanes weighing 147,000 pounds by 1952.

Construction of \$350,000 air cargo building was authorized by the Port Commission on May 3, 1953. Located in the northeast section of the airport, the facility originally had a floor area of 17,000 square feet. The air cargo terminal was opened in the summer of 1954.

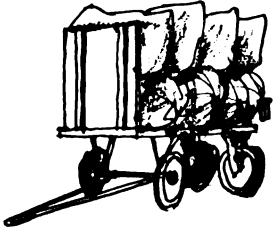
Pan American Airways started operating from Seattle-Tacoma International Airport on July 23, 1953. It moved from Boeing Field to the just finished \$750,000 hangar constructed south of the Administration Building. The same year, Western Airlines completed its hangar in the northeast sector of the airfield at an approximate cost of \$300,000. Flight operations of Pacific Northern Airlines were transferred from Boeing Field in November 1953. Pacific Northern was the seventh air carrier to join the Seattle-Tacoma International Airport "club".



As early as June 1954, the Port of Seattle decided to prepare the airfield for the approaching jet age. As the first step, the main runway was to be extended 1,000 feet north, to a total length of 8,500 feet. This required additional land, of which some 80 acres were purchased. The \$700,000 project was carried out in 1955.

A new 527 car parking lot was opened to the public in 1955. The \$100,000 lot was situated southeast of the Administration Building.

In March, 1956, the Port Commission embarked on a second stage of the main runway expansion plan. The runway was to be extended further north by 1,700 feet, to a total length of 10,200 feet. The plan called for acquisition of 110 acres of land. The total cost of this expansion was estimated at \$2,000,000, including the fencing of the airfield. Work started in 1957, when more than 2,000,000 cubic yards of earth were moved, and continued throughout 1958.



In March 1956, the Port concluded an agreement with the Postmaster General, concerning construction of a \$450,000 airmail facility northeast of the Administration Building. The Port of Seattle built the facility in return for \$40,000 annual rent on a 15 year lease. The airmail facility was formally dedicated on September 13, 1957.

On September 27, 1956, America's only operating jet transport plane, the experimental Boeing 707, made its first landing at the Seattle-Tacoma International Airport.

United Air Lines expanded its facilities at the airport in 1957, with the construction of a three-story building south of its hangar. The structure gave the airline an added 77,000 square feet of floor area. One of the main features of the new building complex was a flight kitchen with an estimated capacity of more than 3,000 meals daily. Cost of the structure: \$1,100,000.

The Port of Seattle acquired some 80 acres north of South 154th Street at a cost of \$590,000, for the so-called "clear zone" of the airport in December 1957.

A major 1958 project was the construction of a \$500,000 north wing to the Administration Building. The two-story north concourse was 600 feet long and 30 feet wide, with a one-story center section 60 feet wide. The north wing increased the number of loading gate positions by four, to a total of 12. The concourse was officially dedicated on July 9, 1959.

A new \$100,000 auto parking lot for 500 cars was built northeast of the Administration Building the same year.



Construction of a \$130,000 crash rescue station, housing the airport fire crew and equipment, was authorized on July 6, 1958. The station was located south of the air cargo building.

The so-called "center line" approach lighting system, consisting of a single row of flashing "strobeacon" lights was installed on the north and south ends of the main runway at a cost of \$140,000. The system, enthusiastically endorsed by the Air Line Pilots Association, began functioning in March, 1959. Surface detection radar was installed by the Federal Aviation Agency at the Seattle-Tacoma International Airport in 1959, at a cost of \$320,000. This equipment has enabled the control tower personnel to see the location and movement of airplanes on the field during periods of poor visibility.

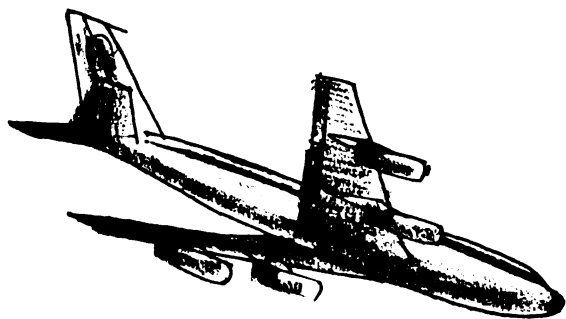
Japan Air Lines, first foreign overseas airline to operate in Seattle, inaugurated its service with a DC-7 Supercourier flight from Tokyo, which landed at the Seattle-Tacoma International Airport on June 28, 1959.



To provide a necessary safety margin for jet airliners leaving Seattle on non-stop flights for such destinations as Tokyo and London, and to prepare the Seattle-Tacoma

International Airport for the Mach 3 supersonic jet traffic, another expansion plan was announced in September 1959. The plan, the most ambitious thus far, was spread over three years and called for lengthening of the main runway to the south from 10,200 to 11,900 feet. To

carry out this project, it was necessary to bridge South 188th Street, creating a four-lane subway 1,075 feet long. About 160 acres of land, mainly south of South 188th Street were to be purchased and it was estimated that 2,250,000 cubic yards of earth would have to be moved. The expansion program called for a total expenditure of \$5,800,000, itemized as follows: site preparation, \$1,600,000; land acquisition, \$1,300,000; earth moving, \$200,000; bridging South 188th Street, \$900,000; drainage, soil stabilization, paving and lighting the runway, \$1,800,000.



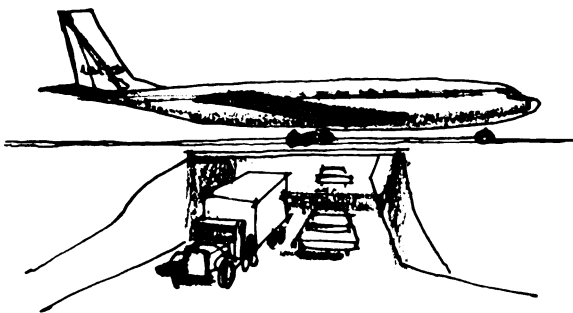
The first airline to start regular jet traffic from the Seattle-Tacoma International Airport was Pan American Airways, with a Boeing 707 taking off for Honolulu on October 3, 1959.

Concurrently with the field expansion, a \$900,000 improvement program for the Administration Building was authorized on December 8, 1959. Its main feature was a \$840,000 construction of the south wing of the Building. The two-story "south concourse" was to be 688 feet long and 34 feet wide, similar in design to the northern one, including a 26 x 140 foot one-story deplaning lobby in the center.

An addition of 19,200 square feet of covered floor space to the existing Air Cargo Building was approved on April 19, 1960, at an estimated cost of \$250,000. Flying Tiger Line, Air Freight carrier which operated from Boeing Field since 1952, moved to the addition to the Air Cargo Building upon its completion in September, 1961.

A massive steel fence was erected at the north end of the main runway to protect pedestrian and automobile traffic on South 154th Street from jet blasts. The northeast parking lot was enlarged to a total capacity of 927 stalls. These two improvements were carried out in 1960 and totaled almost \$100,000. With the enlargement of the northeast parking lot the number of parking stalls at the airport was increased to 2,137, of which 1,046 are for general public, 927 for airport employees, 50 for car rental agencies, and 14 for Port of Seattle personnel.

Harvest of the three foregoing years of intensive construction efforts was reaped in 1961:



Passengers began using the south concourse on May 16.

The first automobile pedestrian tunnel to be built under a Pacific Northwest airfield was formally opened on July 12.

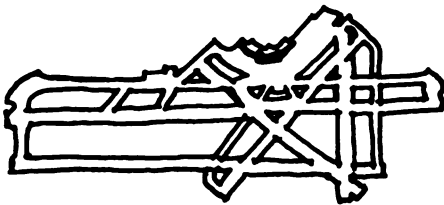
Airplanes were permitted to use the 1,700 feet of the south runway extension on December 26.

In spite of all these achievements, the never-complacent Port of Seattle immediately launched into further improvement programs. The two major projects approved in 1961 were the Equipment Storage Building and the expansion of the airline ticket counters in the Administration Building. Completion of both projects is slated for spring 1962, at an approximate cost of \$180,000. At the same time, the Federal Aviation Agency is providing the field with a new Approach Lighting System, budgeted at \$85,000.

It is estimated that as of January 1962, the capital expenditures at Seattle-Tacoma International Airport reached \$28,000,000. Public investments amounted to \$23,000,000, commercial air carriers having expended the balance.

The Port of Seattle carried out projects totaling \$23,000,000, of which the Federal Government contributed \$9,600,000, or roughly 42 percent.

Projects for the next five years amount to \$15,000,000. The bulk of this money is to be used to augment the number of gate loading positions through addition of two new infield concourses, and the enlarging of the Administration Building itself.

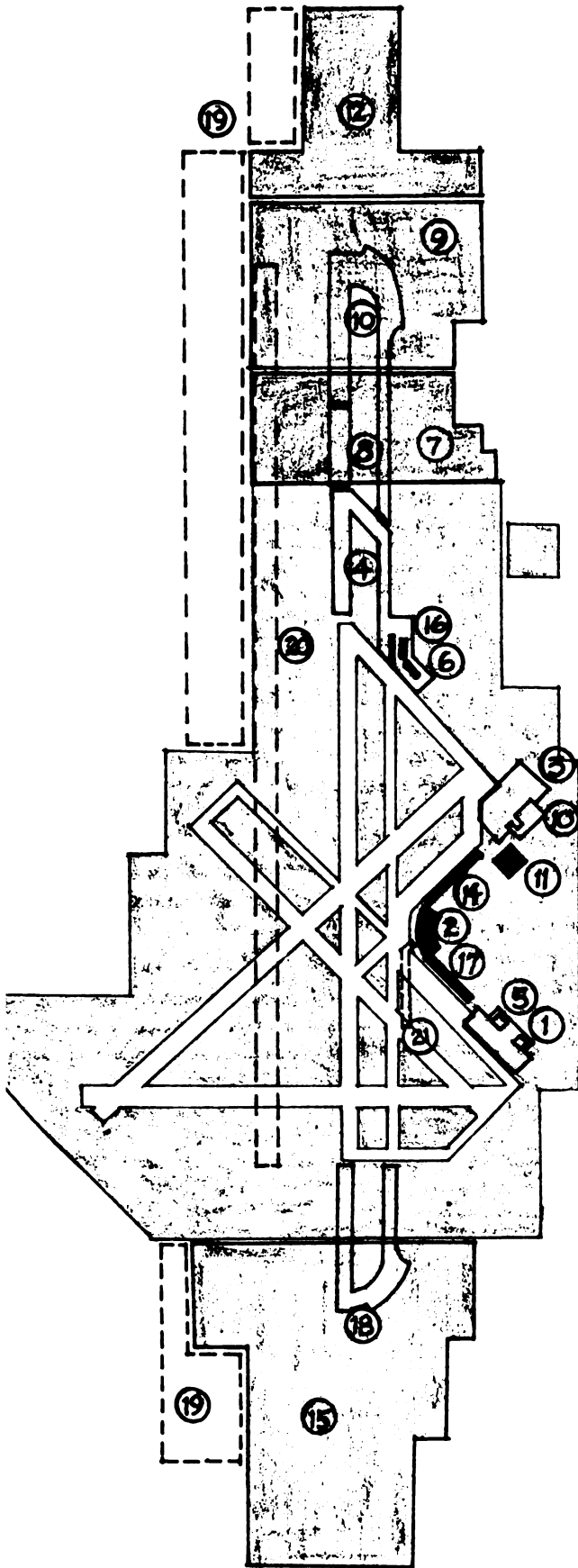


On the horizon looms the possibility of a parallel north-south runway, which would entail another \$13,000,000 expenditure.

Thus, the sky harbor on the hilltop, which has become the pride of the citizens who built and own it, writes daily its own history, which is graphically presented in Figure 1 on the following page.

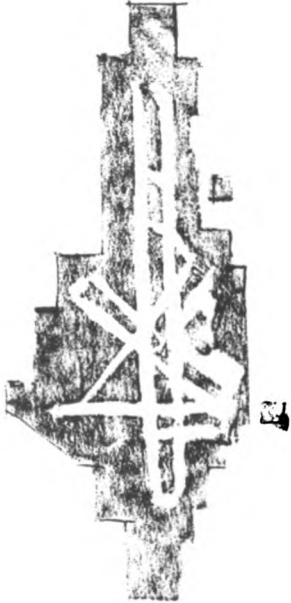
Figure 1

HISTORY OF THE AIRPORT



- 1944 Original runway, 6,100 ft
- 1) 1947 Northwest Hangar
- 2) 1949 Terminal Building
- 3) 1950 United Airlines Hangar
- 4) 1950 Runway extension, 1,400 ft
- 5) 1953 Pan Am Hangar
- 6) 1954 First unit Air Cargo Bldg
- 7) 1954 Land acquisition, 80 acres
- 8) 1955 Runway extension, 1,000 ft
- 9) 1956 Land acquisition, 110 acres
- 10) 1957 United Airlines Building
- 11) 1957 Airmail Facility
- 12) 1957 Land acquisition, 80 acres
- 13) 1958 Runway extension, 1,700 ft
- 14) 1959 North wing of Terminal
- 15) 1960 Land acquisition, 160 acres
- 16) 1961 Second unit Air Cargo Bldg
- 17) 1961 South wing of Terminal
- 18) 1961 Runway extension, 1,700 ft
- 19) Future land acquisition
- 20) Future parallel runway
- 21) Future terminal expansion

Chapter 2
AIRBORNE TRAFFIC OF THE AIRPORT



The airborne commercial traffic of Seattle-Tacoma International Airport consists of revenue passenger, mail, express, and freight movement.

HISTORICAL TRENDS

Revenue Passenger Traffic

The growth of the air passenger traffic has been as follows:

Table 2-1

SEATTLE-TACOMA INTERNATIONAL AIRPORT
IN- AND OUTBOUND REVENUE PASSENGERS

1950	540, 927
1951	643, 509
1952	789, 966
1953	926, 368
1954	1, 048, 383
1955	1, 181, 564
1956	1, 286, 126
1957	1, 408, 488
1958	1, 434, 336
1959	1, 601, 234
1960	1, 635, 839
1961	1, 619, 745

Source: Airport Department Reports
Planning Department Survey

When evaluating the patterns of a traffic, attention should be paid to its annual growth rates expressed in percents:

Table 2-2

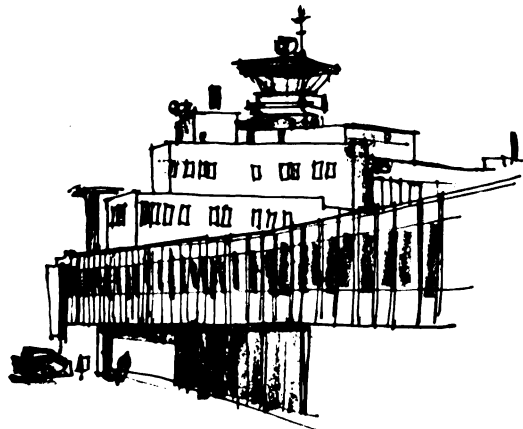
SEATTLE-TACOMA INTERNATIONAL AIRPORT
GROWTH OF REVENUE PASSENGER TRAFFIC

	Percent of Increase or (Decrease)
1951 over 1950	19.0
1952 over 1951	22.8
1953 over 1952	17.3
1954 over 1953	13.2
1955 over 1954	12.7
1956 over 1955	8.8
1957 over 1956	9.5
1958 over 1957	1.8
1959 over 1958	11.6
1960 over 1959	2.2
1961 over 1960	(1.0)
1961 over 1950	199.4

Source: Planning Department Survey

Seasonality is a typical feature of the Seattle Tacoma International Airport air revenue passenger traffic. If the year is divided into the "on-" and "off-season" periods, the former running from April to September, it is discovered that during the past 11 years 57 percent of revenue passengers corresponded to the "on-season" period and 43 percent to the "off-season" period.

August has consistently been the month with the highest number of



passengers, February the lowest.

The volume of in- and outbound air passengers has been well balanced. During the 1951-1960 period the inbound passengers exceeded the outbound by 1 percent.

Airmail

Airmail is another example of growth of Seattle-Tacoma International Airport:

Table 2-3

SEATTLE-TACOMA INTERNATIONAL AIRPORT IN- AND OUTBOUND AIRMAIL

Year	Short Tons
1950	3,138
1951	4,036
1952	4,945
1953	5,010
1954	5,744
1955	8,638
1956	10,542
1957	11,447
1958	12,573
1959	13,490
1960	13,777
1961	14,582

Source: Airport Department Reports
Planning Department Survey

The annual growth of the airmail has been as follows:

Table 2-4

SEATTLE-TACOMA INTERNATIONAL AIRPORT
GROWTH OF AIRMAIL

	Percent of Increase or (Decrease)
1951 over 1950	28.6
1952 over 1951	22.5
1953 over 1952	1.3
1954 over 1953	14.6
1955 over 1954	50.4
1956 over 1955	22.0
1957 over 1956	8.6
1958 over 1957	9.8
1959 over 1958	7.3
1960 over 1959	2.1
1961 over 1960	5.8
1961 over 1950	364.7

Source: Planning Department Survey

The jump in 1955 is due to the transfer of APO Department from San Francisco to Seattle, the high rate of growth in 1956 is due to the start of the first class mail service.

In- and outbound airmail tonnages have been well balanced. The period of 1954-1961 shows 45,180 short tons of inbound mail and 45,613 short tons of outbound mail. The excess of outbound airmail amounted to less than half of one percent of the total tonnage.

December has been the month with the highest airmail tonnage. Over the period of 1951-1961, December accounted for 14 percent of the total annual tonnage. In an evenly distributed pattern,

December share would amount to 8.5 percent only.

Air Express

Air Express is a preferential type of air freight and as such should be treated apart:

Table 2-5

SEATTLE-TACOMA INTERNATIONAL AIRPORT
IN- AND OUTBOUND AIR EXPRESS

	Short Tons
1950	1,325
1951	1,480
1952	1,408
1953	1,336
1954	1,149
1955	1,271
1956	1,419
1957	1,350
1958	1,395
1959	1,554
1960	1,665
1961	1,754

Source: Airport Department Reports
Planning Department Survey

Though Air Express has registered a regular annual increase since 1957, its growth during the 1950-1961 period amounted to a mere 32.4 percent.

Table 2-6

SEATTLE-TACOMA INTERNATIONAL AIRPORT
GROWTH OF AIR EXPRESS

	Percent of Increase or (Decrease)
1951 over 1950	11.7
1952 over 1951	(4.9)
1953 over 1952	(5.1)
1954 over 1953	(14.0)
1955 over 1954	10.6
1956 over 1955	11.6
1957 over 1956	(4.9)
1958 over 1957	3.3
1959 over 1958	11.4
1960 over 1959	7.1
1961 over 1960	5.3
1961 over 1950	32.4

Source: Planning Department Survey



There has been a heavy excess of inbound Air Express over the outbound. Of the 15,827 short tons surveyed during the 1951-1961 period, 9,547 tons corresponded to inbound express and 6,280 to the outbound, an excess of 52 per cent.

Air Freight

Air freight is an important component of the non-passenger air traffic of Seattle-Tacoma International Airport.

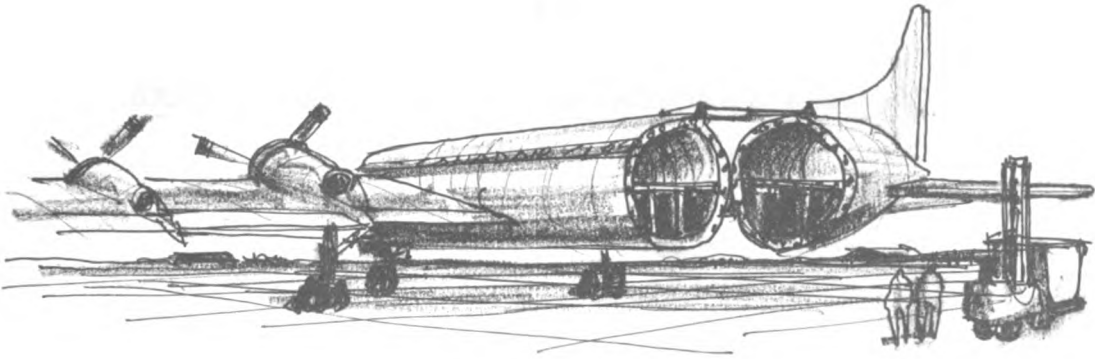


Table 2-7

SEATTLE-TACOMA INTERNATIONAL AIRPORT
IN- AND OUTBOUND AIR FREIGHT

	Short Tons
1950	6,234
1951	5,813
1952	7,301
1953	10,275
1954	13,130
1955	14,981
1956	16,130
1957	15,305
1958	15,061
1959	18,376
1960	20,921
1961	22,465

Source: Airport Department Reports
Planning Department Survey

The growth of the air freight has been far from even:

Table 2-8

SEATTLE-TACOMA INTERNATIONAL AIRPORT
GROWTH OF AIR FREIGHT

	Percent of Increase or (Decrease)
1951 over 1950	(6.8)
1952 over 1951	25.6
1953 over 1952	40.7
1954 over 1953	27.8
1955 over 1954	14.1
1956 over 1955	7.7
1957 over 1956	(5.1)
1958 over 1957	(1.6)
1959 over 1958	22.0
1960 over 1959	13.8
1961 over 1960	7.4
1961 over 1950	260.4

Source: Planning Department Survey

Monthly air freight volumes have been distributed quite evenly, with August being the leading month.

Aircraft Operations

Complete data on aircraft operations go back as far as 1954, and cover the four different types of aircraft operations, namely the landings and take-offs by:

- Commercial airliners carrying passengers;
- Commercial airliners on training or testing flights;
- Military aircraft; and
- General aviation planes.

Table 2-9

SEATTLE-TACOMA INTERNATIONAL AIRPORT
AIRCRAFT OPERATIONS

Year	Airliners	Airliners	Military	General	Total
	Carrying	on Training	Aircraft	Aviation	
	Passengers	& Test			
		Flights			
Thousands of Landings and Take-offs					
1951	28.0				
1952	32.9				
1953	40.8				
1954	45.2	10.2	4.0	1.8	61.2
1955	46.1	11.0	8.0	1.7	66.8
1956	52.3	8.7	13.2	3.9	78.1
1957	55.3	9.8	11.5	5.5	82.1
1958	62.2	9.6	9.8	8.8	90.4
1959	63.1	7.6	4.8	7.7	83.2
1960	56.6	12.6	2.7	9.1	81.0
1961	48.6	12.0	4.5	11.0	76.1

Source: Airport Department Reports

The decline in number of landings of passenger carrying airliners since 1959, is due to the use of jet aircraft with a higher seating capacity than the former piston engined planes. Though the Port of Seattle does not cater to them, private planes have been using the airfield in increasing numbers. Seattle-Tacoma International Airport is the only airport in the area with Customs Officers on permanent duty. Planes arriving from Canada land at the airport for

the customs inspection and then fly to their respective home air-fields in the Seattle area.

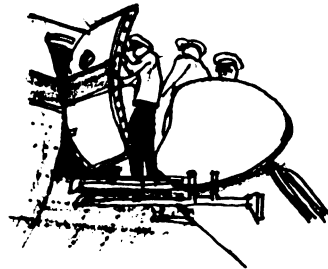
TRAFFIC STRUCTURE

To get a better understanding of the air traffic of the Seattle-Tacoma International Airport, the revenue passenger and air freight movements in 1960 were analyzed in detail.

Air Passenger Traffic

Only the first leg of the trip by outbound revenue passengers was investigated.

Names of specific cities were used for the description of general destination areas. Thus Salt Lake City/Denver denotes the entire Mountain Area of the United States, Kansas City the North Central Area, New York, the North Atlantic Area, and the like.



The geographic breakdown of the outbound revenue passenger traffic is presented in Table 2-10 on the following page:

Table 2-10

SEATTLE-TACOMA INTERNATIONAL AIRPORT
GEOGRAPHIC DESTINATION OF
OUTBOUND REVENUE PASSENGERS IN 1960

(a) Domestic Traffic

General Area of Destination	Number of Passengers	Percent of Total
San Francisco	129,392	15.6
Los Angeles	119,798	14.4
San Diego	13,924	1.7
Subtotal California	<u>263,114</u>	<u>31.7</u>
Portland, Ore.	56,139	6.7
Salt Lake City/Denver	105,188	12.6
Chicago	38,000	4.6
Houston, Tex.	13,850	1.7
Kansas City	47,992	5.8
New York	39,020	4.7
Miami	17,410	2.1
Washington, D. C.	37,590	4.5
Anchorage	73,881	8.9
Fairbanks	28,870	3.5
Honolulu	19,145	2.3
Subtotal Balance U. S. A.	<u>477,085</u>	<u>57.4</u>
Total Domestic Traffic	<u>740,199</u>	<u>89.1</u>

(b) Foreign Traffic

Vancouver, B. C.	78,720	9.5
London	1,939	.2
Tokyo	7,637	.9
Hong Kong	1,903	.2
Mexico City	349	.1
Total Foreign Traffic	<u>90,548</u>	<u>10.9</u>
Total Foreign and Domestic Traffic	<u>830,747</u>	<u>100.0</u>

Source: Planning Department Survey

Domestic and foreign air passengers enplaned at the Seattle-Tacoma International Airport in 1960 totaled 830,747. Domestic traffic accounted for 89.1 percent, foreign for 10.9 percent. The broad patterns of the air passenger traffic emerge more clearly in the following table:

Table 2-11

SEATTLE-TACOMA INTERNATIONAL AIRPORT
GEOGRAPHIC BREAKDOWN OF
OUTBOUND REVENUE PASSENGER TRAFFIC IN 1960

Area	Number of Passengers	Percent of Total
Pacific Coast cities	471,854	56.80
North America west of 105th meridian	134,058	16.14
Hawaii	19,145	2.30
Far East	<u>9,540</u>	<u>1.15</u>
Destinations west of 105th meridian Subtotal	<u>634,597</u>	<u>76.39</u>
North America east of 105th meridian (including Mexico City)	194,211	23.38
Europe (direct transpolar flights)	<u>1,939</u>	<u>0.23</u>
Destinations east of 105th meridian Subtotal	<u>196,150</u>	<u>23.61</u>
Total	<u><u>830,747</u></u>	<u><u>100.00</u></u>

Source: Planning Department Survey



As Figure 2 on the next page shows, the backbone of Seattle-Tacoma International Airport passenger traffic is the travel between the Pacific Coast cities, from Anchorage, Alaska, to San Diego, California. To the east,

this axis is flanked by travel to the Mountain Area; to the west, by travel to Hawaii and the Far East. Travel to these areas accounted for 76.39 percent of Seattle-Tacoma International Airport's 1960 outbound air passenger traffic. The 105th meridian intersecting Denver, Colorado, represents an important boundary, since only 23.61 percent of Seattle-Tacoma International Airport's outbound passengers crossed that line in easterly direction on the first leg of their trip from Seattle.

An estimate was made of the passenger-miles flown by travelers enplaned at Seattle-Tacoma International Airport in 1960. It amounts to 970,000,000 passenger-miles, of which 900,000,000 passenger-miles corresponded to domestic traffic. The significance of the 970,000,000 passenger-miles becomes apparent if converted into terms of space travel. It corresponds to 2,030 round trips by one astronaut to the moon.

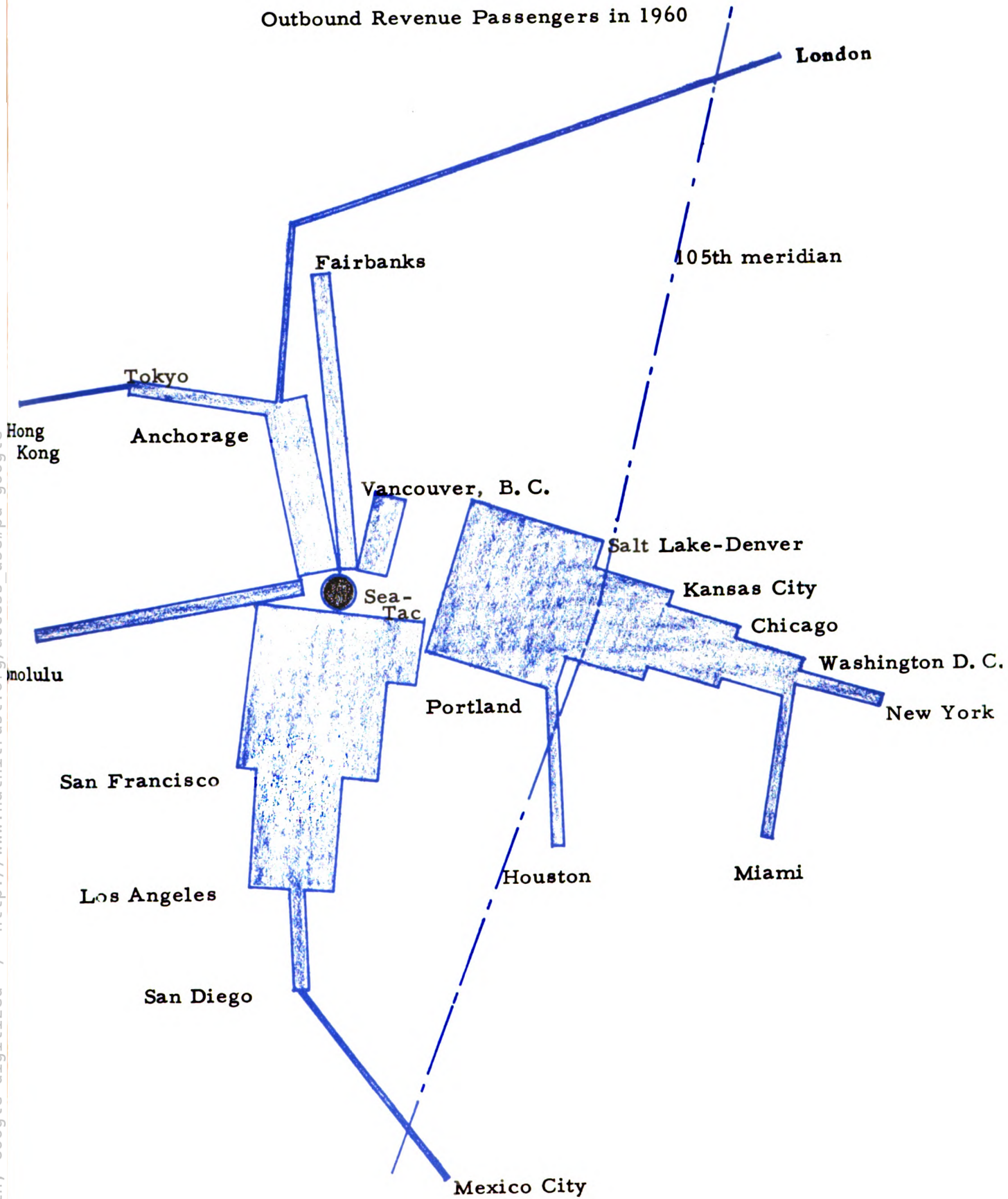
The average length of haul of domestic air passengers outbound from Seattle-Tacoma International Airport amounted to 1,200 miles. This distance is considerably greater than the national average and has an important bearing on the operating revenue which the air carriers derive from the outbound passenger traffic of Seattle-

Figure 2

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Destinations of

Outbound Revenue Passengers in 1960



Tacoma International Airport.

The Planning Department investigated the ratio of travel on official or private business versus travel for personal reasons, primarily tourism. Survey based on a sample comprising public agencies and private companies accounting for 25.7 percent of the labor force of the area, indicates that about 51 percent of Seattle-Tacoma International Airport air passengers in 1960 traveled on business and 49 percent for personal reasons. The national ratio is 60 versus 40 percent, which means that the emphasis on tourism is much stronger at Seattle-Tacoma International Airport than the other major U. S. airports.

Airmail

While the so-called passenger-mile is the most significant unit of count in the passenger traffic, the corresponding unit in the cargo movement is the "ton-mile". It represents one short ton of cargo (mail, express, freight) flown at a distance of one mile.

It is estimated that the airmail enplaned at Seattle-Tacoma International Airport in 1960 logged some 12,000,000 ton miles.

Air Freight

The study of the air freight was seriously hampered by the lack of statistical information on behalf of several carriers operating at the airport.

Table 2-12

SEATTLE-TACOMA INTERNATIONAL AIRPORTAIR FREIGHT

(a) Outbound Freight

Rank	Area of Destination	Short Tons	Percent of Total
1	Alaska	6,470	57.2
2	North Atlantic U. S.	1,730	15.3
3	North Central U. S.	1,240	10.9
4	U. S. West Coast South of Seattle	510	4.5
5	Far East	450	3.9
6	Mountain Area of U. S.	360	3.2
7	Canada	270	2.4
8	South Central U. S.	100	.9
9	South Atlantic Area of U. S.	80	.7
10	Hawaii	70	.6
11	Europe direct via Polar Route	40	.4
	Total	<u>11,320</u>	<u>100.0</u>

(b) Inbound Freight

Rank	Area of Origin	Short Tons	Percent of Total
1	U. S. West Coast South of Seattle	2,500	26.1
2	North Atlantic U. S.	2,380	24.8
3	North Central U. S.	2,300	24.0
4	Alaska	1,050	10.9
5	Far East	480	5.0
6	Mountain Area of U. S.	330	3.5
7	South Atlantic U. S.	160	1.7
8	Canada	120	1.3
9	Hawaii	100	1.0
10	Europe direct via Polar Route	100	1.0
11	South Central U. S.	70	.7
	Total	<u>9,590</u>	<u>100.0</u>

(c) Total Freight

Rank	Area of Origin or Destination	Short Tons	Percent of Total
1	Alaska	7,520	36.0
2	North Atlantic U. S.	4,110	19.7
3	North Central U. S.	3,540	16.9
4	U. S. West Coast	3,010	14.4
	South of Seattle		
5	Far East	930	4.4
6	Mountain Area of U. S.	690	3.3
7	Canada	390	1.9
8	South Atlantic U. S.	240	1.1
9	Hawaii	170	.8
10	South Central U. S.	170	.8
11	Europe direct via Polar Route	140	.7
	Total	<u>20,910</u>	<u>100.0</u>

Source: Planning Department Survey

Following the patterns of the waterborne trade, Seattle asserted itself as a gateway to Alaska even in the airborne cargo traffic, which accounted for 36 percent of the air freight tonnages of the airport.



Air Freight enplaned at Seattle-Tacoma International Airport in 1960 logged some 20,000,000 ton-miles. In space terms, this means 20 round trips to the moon by the Friendship 7 Space Capsule, which weighed 2,000 pounds.

The commodity structure of Seattle-Tacoma International Airport 1960 air freight was established and the dollar value of the freight estimated:

Table 2-13

SEATTLE-TACOMA INTERNATIONAL AIRPORTCOMMODITY BREAKDOWN AND VALUEESTIMATE OF AIR FREIGHT 1960

(a) Outbound Freight

Commodity Group	Short Tons	Estimated Value Dollars
Animals & Animal Products, Edible	620	310,000
Animals & Animal Products, Inedible	590	4,730,000
Vegetable Food Products	320	380,000
Vegetable Products, Inedible	900	360,000
Textile Fibers & Manufactures	720	930,000
Wood & Paper	670	130,000
Nonmetallic Minerals	580	120,000
Metals & Manufactures	870	13,100,000
Machinery & Vehicles	3,150	60,100,000
Chemicals & Related Products	440	4,380,000
Miscellaneous	<u>2,460</u>	<u>4,920,000</u>
Total	<u>11,320</u>	<u>89,460,000</u>

(b) Inbound Freight

Animals & Animal Products, Edible	140	70,000
Animals & Animal Products, Inedible	360	2,870,000
Vegetable Food Products	30	30,000
Vegetable Products, Inedible	750	300,000
Textile Fibers & Manufactures	660	850,000
Wood & Paper	1,570	310,000
Nonmetallic Minerals	400	80,000
Metals & Manufactures	350	5,310,000
Machinery & Vehicles	3,880	116,590,000
Chemicals & related Products	180	1,820,000
Miscellaneous	<u>1,270</u>	<u>2,540,000</u>
Total	<u>9,590</u>	<u>130,770,000</u>

(c) Total Freight

Commodity Group	Short Tons	Estimated Value Dollars
Animals & Animal Products, Edible	760	380,000
Animals & Animal Products, Inedible	950	7,600,000
Vegetable Food Products	350	410,000
Vegetable Products, Inedible	1,650	660,000
Textile Fibers & Manufactures	1,380	1,780,000
Wood & Paper	2,240	440,000
Nonmetallic Minerals	980	200,000
Metals & Manufactures	1,220	18,410,000
Machinery & Vehicles	7,030	176,690,000
Chemicals & Related Products	620	6,200,000
Miscellaneous	<u>3,730</u>	<u>7,460,000</u>
Total	20,910	220,230,000

Source: Planning Department Survey

The "Machinery and Vehicles" group led both in tonnages and in value. In the outbound traffic it was represented by shipments of machinery, vehicles and spare parts to Alaska, in the inbound traffic by aircraft engines and electronic equipment from the Atlantic Seaboard and California. The difference in the composition of the out- and inbound shipments of the "Machinery and Vehicles" group explains why the unit value of the inbound shipments was almost twice as high as that of the outbound.

The value of Seattle-Tacoma International Airport 1960 air freight is estimated at \$220,000,000. Per ton value of the air express is about five times higher than that of air freight. Hence Seattle-Tacoma International Airport's 1960 air express was worth some \$80,000,000, and the combined 22,700 short tons of air cargo (freight

and express) were valued at \$300,000,000, whereas the 2,070,000 short tons of waterborne foreign cargo, handled by the Seattle Harbor in 1960, at a mere \$240,000,000. The per ton value of the airborne goods was almost 100 times higher than that of the waterborne trade goods.

FUTURE TRENDS

Having examined the past and the present, attention is now directed toward the future.

Air Passenger Traffic

The lesson derived from the study of the past trends indicates that the spectacular growth of the Seattle-Tacoma International Airport air passenger traffic during the fifties until 1957, has been tapering off during the recent years. The passenger traffic seems to be reaching a level of saturation, at which the former annual increments, expressed in percentages, are unlikely to be repeated.

The jet age lived up to the expectations of speed and comfort, but failed as far as the cost of travel is concerned. Instead of reducing the domestic fares, the air carriers have upped them sizably.



Airlines chose this course because they held the demand for air travel to be inelastic. They felt a hike of fares would not affect the travel volume adversely.

whereas a fare reduction would not automatically safeguard a boost in the air passenger movement. The airlines' scepticism is

partly due to the fact that even today an overwhelming portion of the air travel is done by the "precious few". Less than 15 percent of the population has ever flown a commercial airliner, and the Port of New York Authority discovered a startling range in the incidence of air travel of different income groups:

Yearly Income Group	Number of Yearly Air Trips per 100 Persons Within the Group
Up \$ 5,999	1
From \$ 6,000 to \$ 9,999	3
From \$10,000 to \$14,999	10
Over \$15,000	80

In view of this fact, and because of the existing strained financial position, the domestic air carriers have been unwilling to put their operating revenue in a possible jeopardy by experimenting with the prices of the airline tickets.

Having captured their potential markets at the present fare levels, the air carrier could make further inroads into the inter-city common carrier travel primarily through lowering the fares. As they are unlikely to do so, the forthcoming growth of the air passenger traffic will stem mainly from the increase in the population and its affluence. This, however, is a gradual process, and therefore the concensus indicates a slower rate of increase of the air passenger travel in the future than in the fifties.

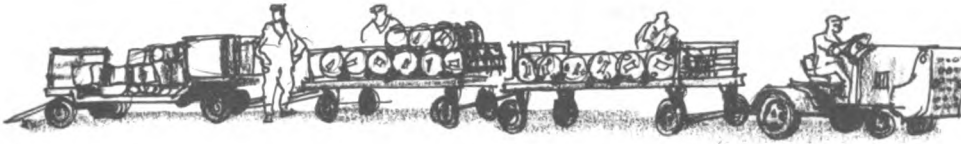
Survey entitled "Non-Resident Travel in Washington 1959-60", published by the Business and Economic Research Division of the Washington State Department of Commerce and Economic Development, discovered that 65 percent of the Seattle-Tacoma International

Airport air passengers were non-residents in the State of Washington.

Though undoubtedly there exist local factors affecting the volume of Seattle-Tacoma International Airport air passenger travel, such as the level of activity in the aviation industry in the Seattle area and/or the state of preparedness at the surrounding military bases, the findings of the aforementioned survey partially explain the pronounced similarity of Seattle-Tacoma International Airport's passenger growth with the national trends and a high degree of correlation with the good old "work horse", the Gross National Product.

In projecting the Seattle-Tacoma International Airport passenger traffic up to 1980 the Planning Department took more-over the following factors into consideration:

- (1) High ratio of travel for personal reasons, mainly tourism. One of the first economies people take during recessions is to cut down costly pleasure travel.
- (2) High ratio of travel along the Pacific Coast. Highway communications between the West Coast cities have been steadily improved, giving a boost to the strongest competitor of air travel, the personal automobile, which over the past ten years has been steadily gaining ground over the common carriers.



The Planning Department made a low and a high projection of the air passenger traffic. Though the subsequent forecasts are based on the low projection, the high projection appears to be attainable, barring long and/or frequent recessions.

Table 2-14

SEATTLE-TACOMA INTERNATIONAL AIRPORT
FORECAST OF
IN- AND OUTBOUND REVENUE
AIR PASSENGER TRAFFIC

Number of Passengers

Selected Years	Low Projection	High Projection
1965	2,040,000	2,130,000
1970	2,460,000	2,620,000
1975	2,870,000	3,100,000
1980	3,300,000	3,600,000

Source: Planning Department Survey

Past and future passenger traffic of the Seattle-Tacoma International Airport is graphically presented in Figure 3 on the next page.

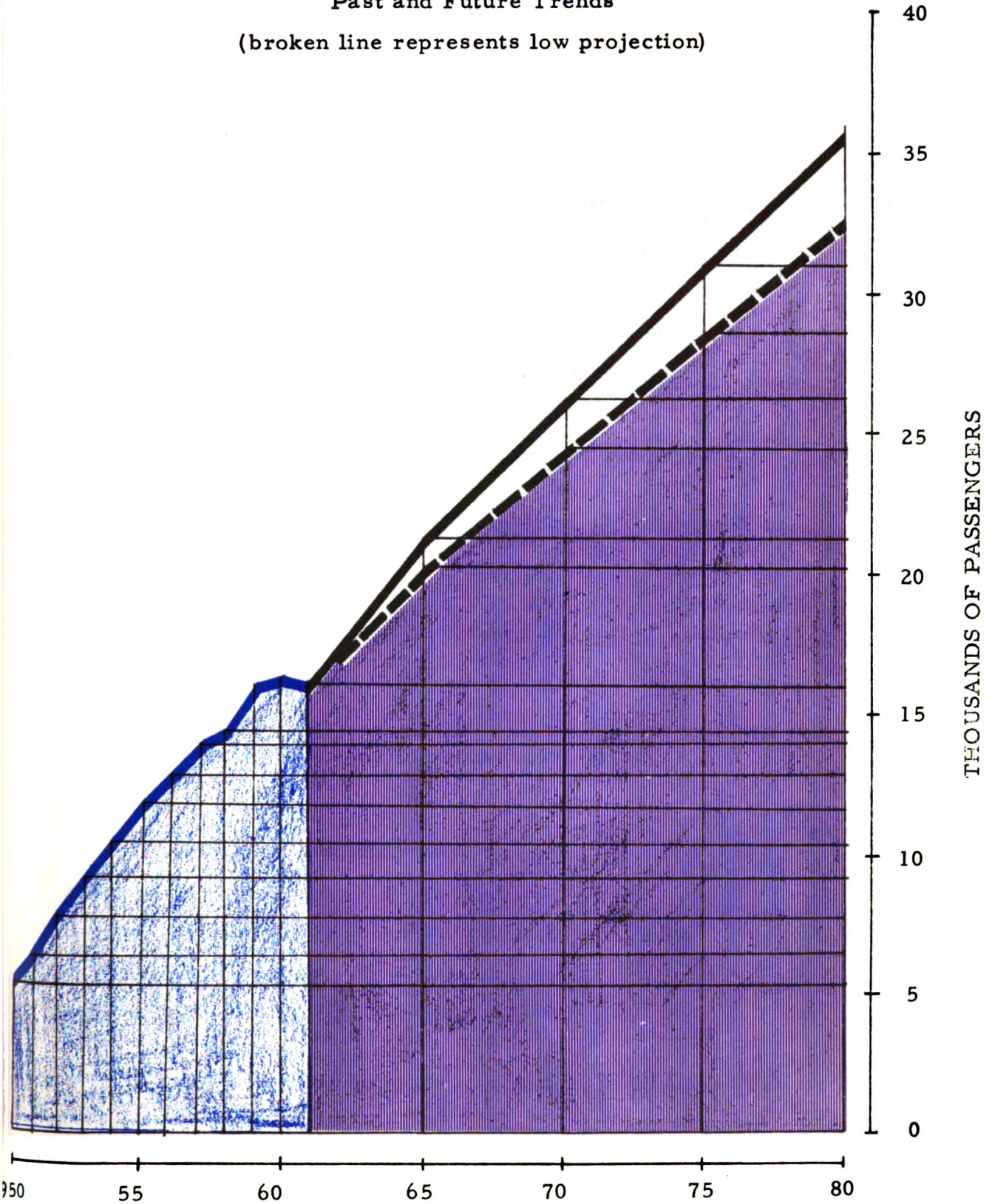
Figure 3

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Passenger Traffic

Past and Future Trends

(broken line represents low projection)



Separate forecasts were made for the passenger traffic handled by the north and south wing of the Administration Building.

Table 2-15

SEATTLE-TACOMA INTERNATIONAL AIRPORT
FORECAST OF REVENUE PASSENGER TRAFFIC
TO BE HANDLED BY
THE NORTH AND SOUTH WINGS
OF THE ADMINISTRATION BUILDING

	Number of Passengers	
Selected Years	North Wing	South Wing
1960	820,000	815,000
1965	1,035,000	1,005,000
1970	1,220,000	1,240,000
1975	1,405,000	1,465,000
1980	1,590,000	1,710,000

Source: Planning Department Survey

At present, the north wing handles more passengers than the south wing, but the two traffic flows will become balanced in the early seventies. However, the south wing will eventually have the heavier flow.



Trends in the monthly air passenger movements will be

as follows:

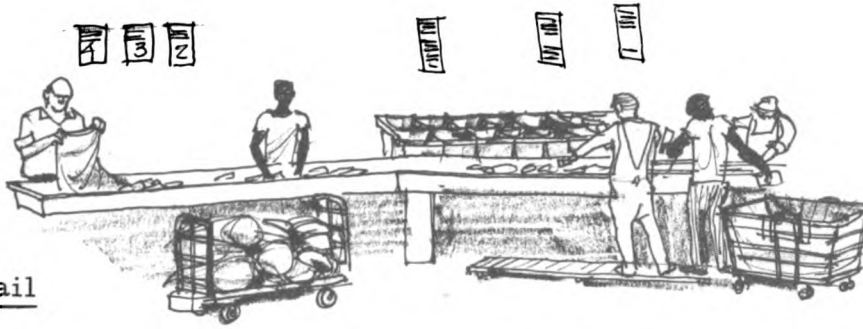
Table 2-16

SEATTLE-TACOMA INTERNATIONAL AIRPORT
FORECAST OF
MONTHLY REVENUE PASSENGER TRAFFIC

	Selected Years				
	1960	1965	1970	1975	1980
On-Season Months	Thousands of Passengers				
April	130	161	198	234	271
May	136	162	193	222	254
June	164	208	252	295	340
July	170	206	247	287	329
August	181	226	270	313	360
September	153	181	213	244	276
Subtotal	<u>934</u>	<u>1,144</u>	<u>1,373</u>	<u>1,595</u>	<u>1,830</u>
Off-Season Months					
October	134	160	190	218	250
November	106	140	171	200	232
December	111	156	190	224	258
January	125	157	193	228	265
February	107	133	160	189	218
March	118	150	183	216	247
Subtotal	<u>701</u>	<u>896</u>	<u>1,087</u>	<u>1,275</u>	<u>1,470</u>
Grand Total	1,635	2,040	2,460	2,870	3,300

Source: Planning Department Survey

The preceding table foresees a gradual decrease in the share of the "on-season" traffic, matched by the corresponding growth of the share of the "off-season" movement. Ultimately, this will lead to a more even distribution of the monthly passenger load.



Airmail

The growth of airmail since 1955 has been fairly regular; the forecast is as follows:

Table 2-17

SEATTLE-TACOMA INTERNATIONAL AIRPORT
FORECAST OF AIRMAIL

Selected Years	Short Tons
1965	18,700
1970	23,500
1975	28,200
1980	33,000

Source: Planning Department Survey

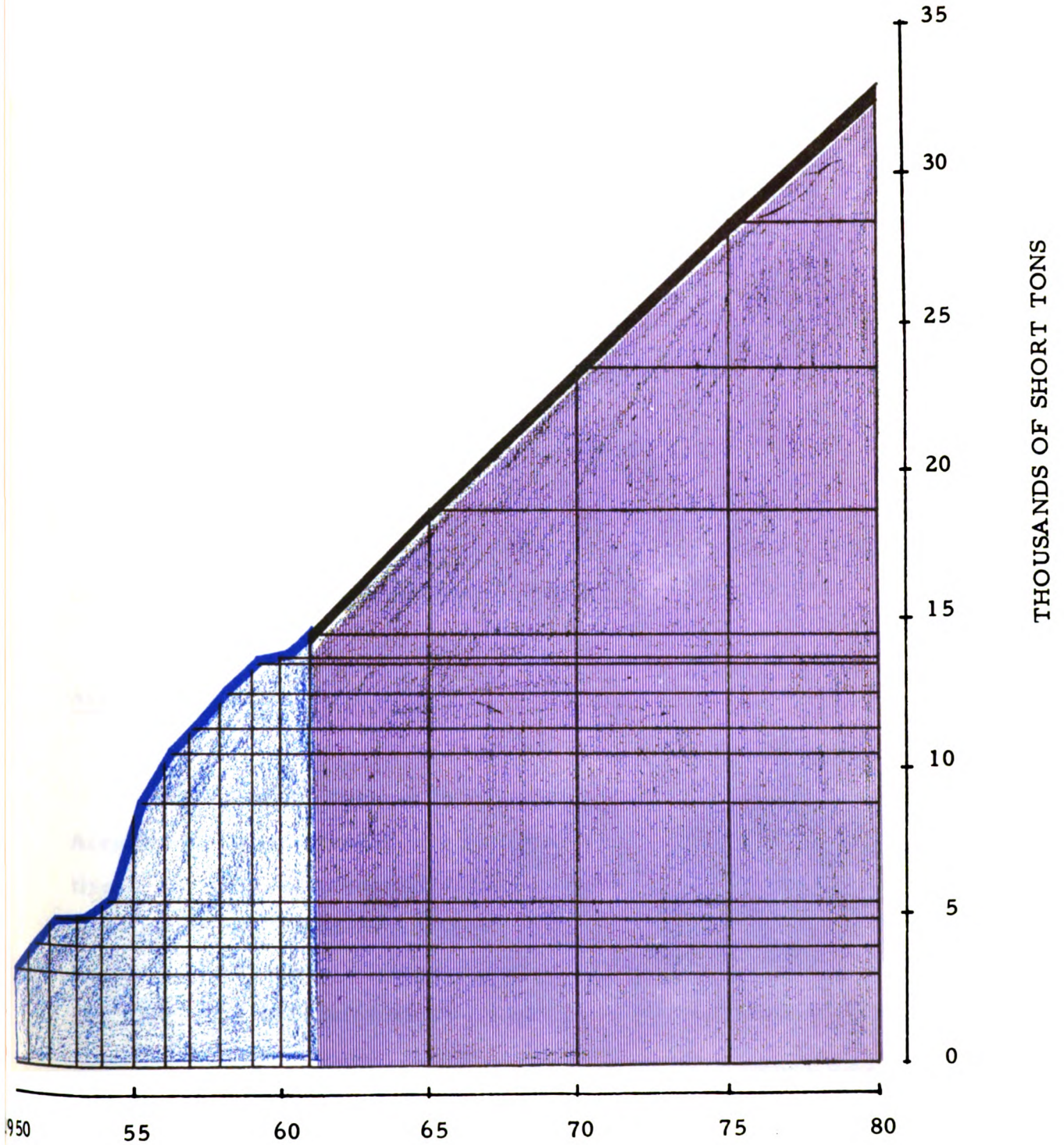
The existing volume of airmail is to double by 1975, as shown in Figure 4. However, if the Postmaster General implements an increased air transportation in the inter-city mail service, the growth of Seattle-Tacoma International Airport's airmail will be substantially accelerated. The implementation is under serious consideration at present.

Figure 4

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Airmail Traffic

Past and Future Trends



Air Express

The following tonnages are expected:

Table 2-18

SEATTLE-TACOMA INTERNATIONAL AIRPORT
FORECAST OF AIR EXPRESS

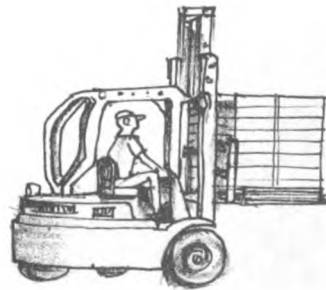
Selected Years	Short Tons
1965	2,000
1970	2,400
1975	2,900
1980	3,400

Source: Planning Department Survey

Trends in the air express handled by the Seattle-Tacoma International Airport, are charted in Figure 5.

Air Freight

The Seattle-Tacoma International Airport air freight traffic has been sensitive to the general economic situation of the country. Two of three recessions caused actual drops in the air freight volume and



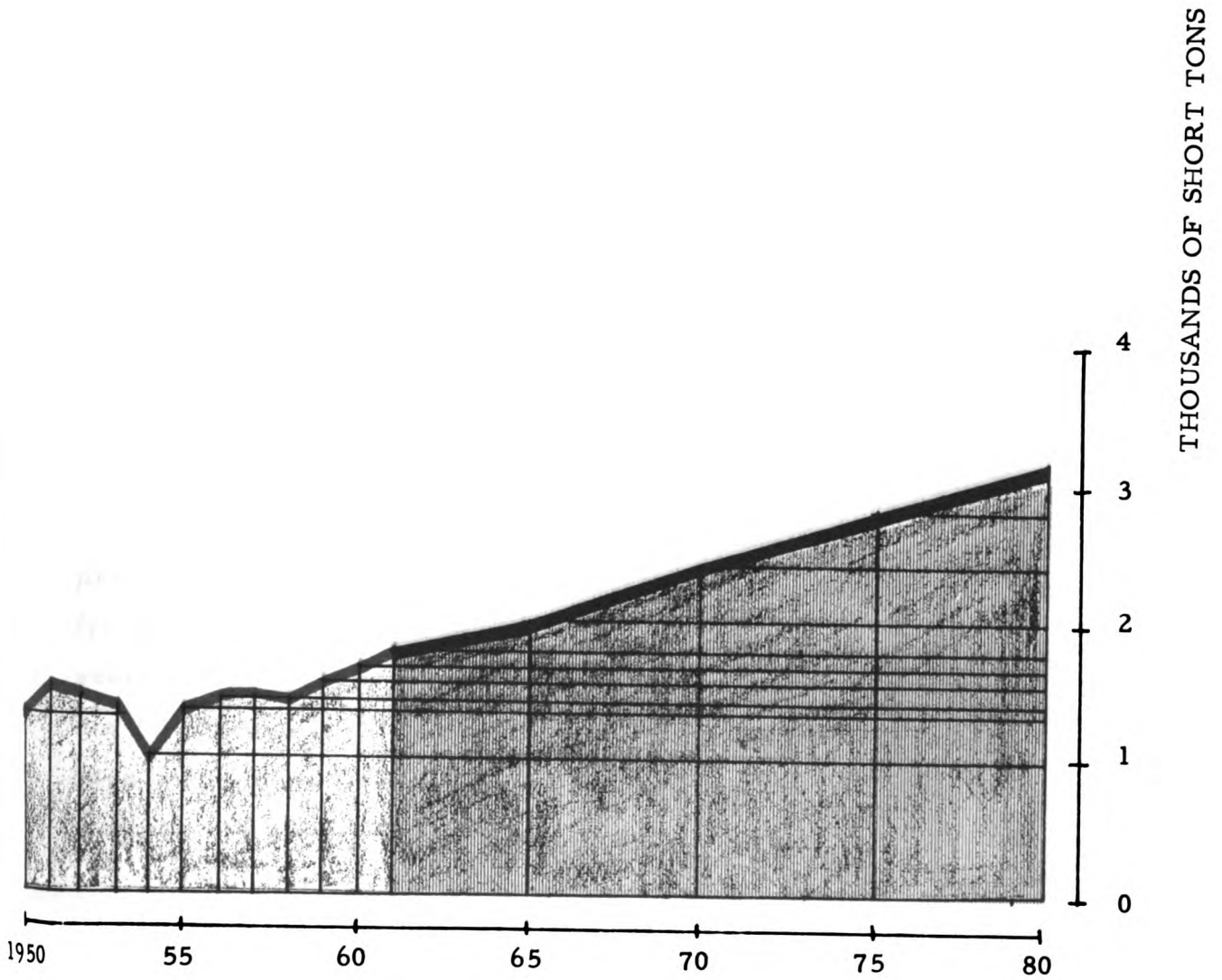
the 1960-1961 recession slowed down its annual growth considerably.

Figure 5

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Air Express Traffic

Past and Future Trends



The future of the air freight depends even more on the cost factor than that of the air passenger traffic. The optimism which prevailed two years ago when high hopes were set on the all-cargo planes then under construction or on the drafting board, faded when the swing-tail Canadair C-44 did not prove to be such a success as expected, and when other aircraft manufacturers encountered problems inducing them to use a great deal of caution. Domestic air freight traffic, particularly jet traffic, is basically a night operation. An all-cargo jet would remain idle during the day. Therefore, attempts are now being made to design an aircraft readily convertible from a cargo to a passenger carrier.

In November, 1959, the Planning Department made a forecast of Seattle-Tacoma International Airport air freight in the year 1970. The forecast was based on the anticipation of what had been then described as an "air freight explosion" which was to take place around 1965. Three years ago, the leading national air freight forecasters expected the 1965 air freight volume to quadruple between 1965 and 1970, due to the breakthrough in the construction of an all-cargo jet and the correspondingly reduced costs of the air freight service.

At that time (November 1959), the Planning Department predicted the 1965 Seattle-Tacoma International Airport air freight at 40,000 short tons. Two years later, this forecast seems to be well attainable. In the meantime the chances for the "air freight explosion" to take place between 1966 and 1970 have been somewhat lessened. However, they still lie within the realm of possibilities.

Table 2-19

SEATTLE-TACOMA INTERNATIONAL AIRPORT
FORECAST OF AIR FREIGHT

Selected Years	Short Tons
1965	40,000
1970	160,000
1975	220,000
1980	280,000

Source: Planning Department Survey

Figure 6 illustrates past and future trends in the Seattle air freight.

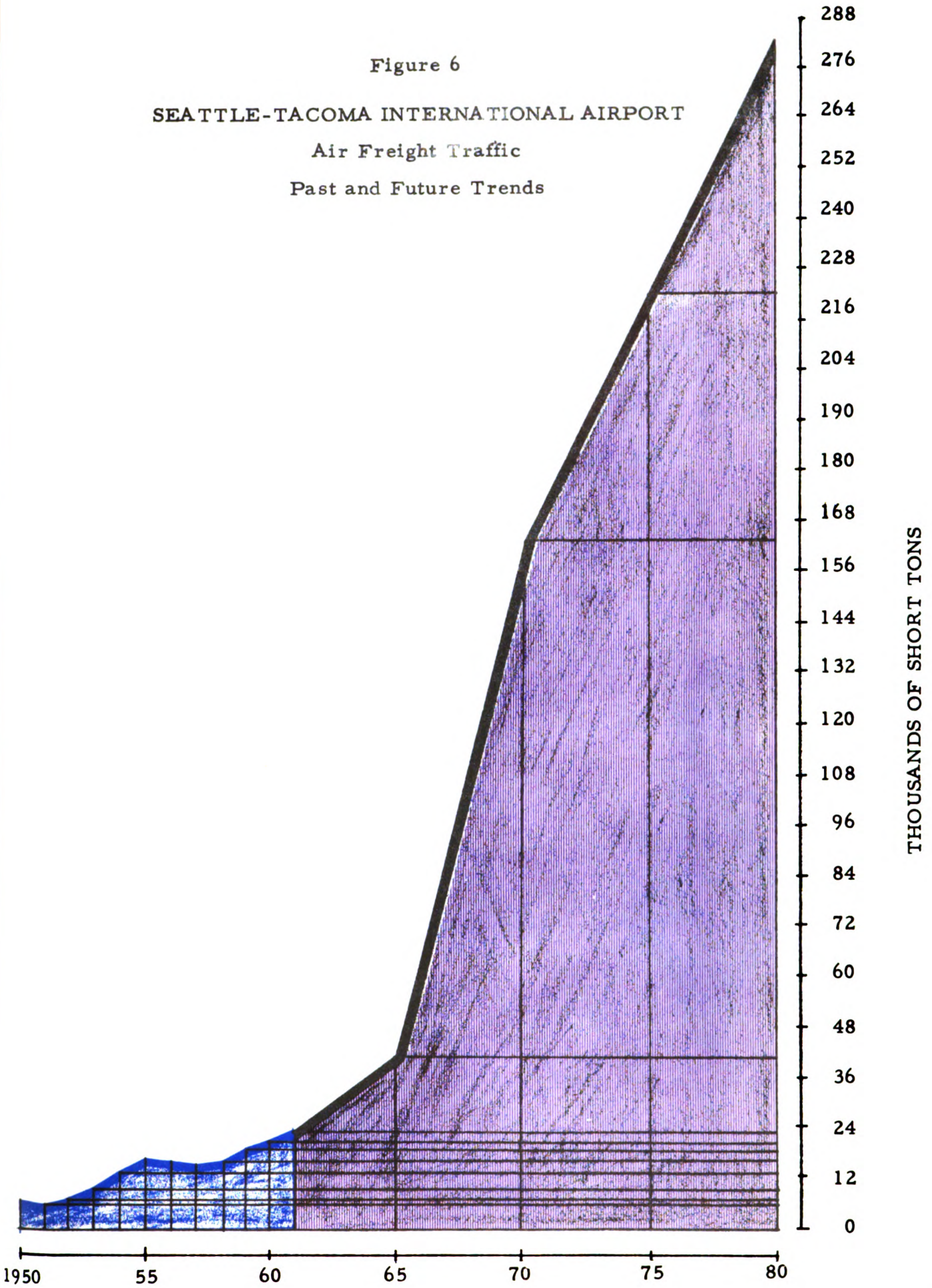
Different scales have been used in each of the Figures 4, 5 & 6 due to the wide variations in the volume of airmail, express and freight.

Figure 6

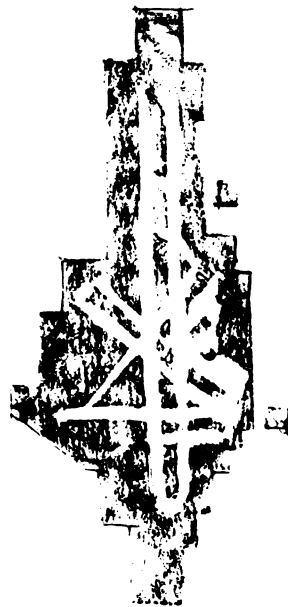
SEATTLE-TACOMA INTERNATIONAL AIRPORT

Air Freight Traffic

Past and Future Trends



Chapter 3
ECONOMIC IMPACT
OF THE AIRBORNE TRAFFIC



This report follows the study of the economic impact produced by the waterborne trade of the Seattle Harbor.

Though the reports are akin, a basic difference exists between the harbor and the airport:

Whereas Elliott Bay, the natural sea harbor, caused Seattle to spring up in its actual location, causation was reversed in the case of the Seattle-Tacoma International Airport. It was Seattle, its population and economic importance, so the reasoning goes, that brought the Seattle-Tacoma International Airport into existence.

The reasoning is essentially sound, but in the specific case of the Seattle-Tacoma International Airport, the early history of the airfield does not fully corroborate this contention. Had Vancouver, Washington, or even more so Tacoma, grasped the offer extended by the Civil Aeronautics Administration, citizens of King County could not boast of their own international aerodrome. The Puget Sound area could hardly sustain two airports of that size even today.

Review of the past events also renders the question "Who comes first: the public agencies, or the private air carriers?" rather academic. While paying due respect to the spirit of service to the public shown by the air carriers, history of the Seattle-Tacoma International Airport clearly indicates that only an agency which can operate a facility, deemed in public interest, at no profit or even at a loss, is able to embark upon a venture of such proportions.

Thus, in the final analysis, the Port of Seattle can claim to be the prime originator of economic benefits, or impact, accruing

to the King County residents from the airborne traffic of the Seattle-Tacoma International Airport.

PRIMARY IMPACT

While the preceding two chapters delved into the past and the future, the primary economic impact described in this section, refers to one year only, namely to the situation as it prevailed in 1961.

The primary impact produced by airborne traffic of the Seattle-Tacoma International Airport is expressed in three terms:

a. Employment

In this column jobs are listed which were found to be directly attributable to airborne traffic in 1961. Each job represents services of one person during the whole year. Due to the personnel turnover in some categories, the number of actual job holders was somewhat higher than the aggregate of the yearly jobs listed below.

b. Payrolls

Gross annual payrolls resulting from the aforementioned jobs.

c. Business Volume

Dollar volume of gross receipts, revenues and sales generated by the airborne traffic of the Seattle-Tacoma International Airport in 1961. The business volume is treated separately from employment and payrolls.

The various impact producing activities were consolidated into six general groups:

1. Port of Seattle and Federal Agencies
2. Air Traffic Generating Activities
3. Air Carrier Operations
4. Local Supporting Services
5. General Consumer Services
6. Air Freight Oriented Industries & Commerce

Though the existence of the Seattle-Tacoma International Airport is felt nationally and even internationally, this study limited itself to ascertaining the very immediate, tangible and direct economic benefits of the airborne traffic to its owners, the citizens of the King County. Jobs enumerated below, are held almost exclusively by residents of the Seattle Port District, co-extensive with the boundaries of the King County. The primary impact was as follows:

1. Port of Seattle and Federal Agencies

First in the hierarchy of impact producing factors is the Port of Seattle. In its daily task of running and maintaining the Seattle-Tacoma International Airport, the Port employs 108 persons whose activities are directly attributable to the airborne traffic of the airfield.



Of the 108 jobs, 5 corresponded to the airport administration, 33 to the field and building maintenance. The airport security force consisted of 14 men and the fire and rescue force of 22. Included are also the 25 persons doing the janitorial work of the Administration Building, although they are employed indirectly through a private contractor. About 9 jobs in the downtown head

office of the Port of Seattle were found to be directly attributable to the Seattle-Tacoma International Airport and have been held by persons working in the Engineering and Accounting departments.

The Port of Seattle, in conjunction with the Federal Aviation Agency, has been undertaking almost incessant construction at the airfield. In recent years, this activity reached such volume that it has been equivalent to some 200 full-time, year round jobs.

The Immigration and Naturalization Service, the Public Health Department, and the Bureau of Customs, employ altogether 20 persons. That section of the Weather Bureau, which serves the airborne traffic of the Seattle-Tacoma International Airport, totals 22 employees.

There are 104 jobs attributable to the airborne traffic of the Seattle-Tacoma International Airport with the various dependencies of the Federal Aviation Agency. In number of employees, the largest dependency is the Airport Traffic Control Tower with 36 jobs, followed by the Air Route Traffic Control with 35 jobs. Among other dependencies were Airways Technical Field Office, Air Carrier District Office and Facility Flight Check.

Table 3-1

SEATTLE-TACOMA INTERNATIONAL AIRPORT
PORT OF SEATTLE AND FEDERAL AGENCIES

Category	Employment	Annual Payroll Dollars
Port of Seattle	108	532,000
Public Airport Construction	200	1,400,000
Federal Agencies	<u>147</u>	<u>1,086,000</u>
Total	455	3,018,000

Source: Planning Department Survey

2. Air Traffic Generating Activities

This group comprises activities instrumental in the generating of the airborne traffic of the Seattle-Tacoma International Airport.

Responsible for the promotion of the air passenger traffic are the sales organizations of the airlines. In Seattle, 257 persons sell the air passenger services of air carriers operating from the Seattle-Tacoma International Airport, and another 38 perform the same task for the airlines which do not fly to the region, but maintain their sales offices in the city.

Another important segment responsible for furthering the air travel through sales and promotion are the Seattle area Travel Bureaus and Agencies. The study re-



corded only jobs directly attributable to the Seattle-Tacoma International Airport air passenger traffic and found that 186 employees of the Travel Bureaus fell under this category.

Last but not least are the travel departments of the Seattle area industrial, commercial and educational enterprises. In these departments, 23 employees derive their livelihood from arranging air travel for their superiors and fellow workers.



The Seattle Airmail Facility was placed in this group. Its employment averages 166 jobs.

Sixteen employees are active in selling and promoting the air freight and air express services of carriers operating from the Seattle-Tacoma International Airport. Another important group in the air freight business, the Air Freight Forwarders, employ 50 persons.

Table 3-2

SEATTLE-TACOMA INTERNATIONAL AIRPORTAIR TRAFFICGENERATING ACTIVITIES

Category	Employment	Annual Payroll Dollars
Air Passenger Traffic		
Carriers directly Serving Seattle	257	1,440,000
Carriers Maintaining Offices in Seattle	38	199,000
Travel Bureaus & Agencies	184	1,018,000
Travel Departments of Private and Public Enterprises	<u>23</u>	<u>108,000</u>
Subtotal	<u>502</u>	<u>2,765,000</u>
Airmail		
Airmail Facility	<u>166</u>	<u>948,000</u>
Air Freight & Air Express		
Air Carriers	16	89,000
Air Freight & Air Express	<u>49</u>	<u>266,000</u>
Subtotal	<u>65</u>	<u>355,000</u>
Total	733	4,068,000

Source: Planning Department Survey

3. Air Carrier Operations



The largest single group in the economic impact are the air carriers operating from Seattle-Tacoma International Airport.

Nine scheduled airlines were at the field in the third quarter of 1961:

Domestic

Alaska Airlines, Incorporated

The Flying Tiger Line, Inc. (all cargo carrier)

Northwest Orient Airlines, Inc.

Pacific Northern Airlines, Inc.

Pan American World Airways, Inc.

United Air Lines, Inc.

Western Air Lines, Inc.

Foreign

Japan Air Lines Company, Ltd. (operates cargo only at present)

Trans-Canada Air Lines

Altogether 3,161 jobs were held by the airline employees, 23 of them by the employees of the two foreign carriers.

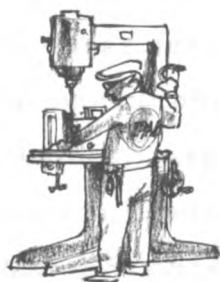
Table 3-3

SEATTLE-TACOMA INTERNATIONAL AIRPORTAIR CARRIER OPERATIONS

Category	Employment	Annual Payroll Dollars	Per Capita Annual Income Dollars
<u>Flight Personnel</u>			
Pilots, Co-Pilots, Flight Engineers	713	11,414,000	16,008
Pursers & Stewardesses	<u>456</u>	<u>1,904,000</u>	4,175
Subtotal	<u>1,169</u>	<u>13,318,000</u>	
<u>Ground Personnel</u>			
Traffic Representatives, Dispatchers, Ramp Personnel, Commissaries	668	3,057,000	4,577
Repairs & Maintenance	874	5,172,000	5,917
Administration	<u>450</u>	<u>2,834,000</u>	6,298
Subtotal	<u>1,992</u>	<u>11,063,000</u>	
Total	3,161	24,381,000	

Source: Planning Department Survey

4. Local Supporting Services



A survey of this segment was rather disappointing in that it found only 107 jobs in the Seattle area directly attributable to the airborne traffic of carriers operating from the Seattle-Tacoma International Airport. Only two airlines are based in Seattle and as such, keep their maintenance and supply bases in the area.

Table 3-4

SEATTLE-TACOMA INTERNATIONAL AIRPORT
LOCAL SUPPORTING SERVICES

Category	Employment	Annual Payroll Dollars
Radio Service	25	178,000
Firms Specialized in Maintenance & Repair of Aircraft	19	112,000
Aviation Fuel Suppliers	9	60,000
Local Food Stuff Purveyors	34	171,000
Fleet Line Service	<u>20</u>	<u>98,000</u>
	107	619,000

Source: Planning Department Survey

5. Consumer Services in the Airport Area



The airborne traffic of the Seattle-Tacoma International Airport gives rise to a variety of consumer services clustered within the immedi-

ate perimeter of the airport. Some 720 persons render these services combined in the following categories: Ground Transportation, viz car rentals, taxicabs, limousines, airport buses, parking and gasoline service station; Dining, Refreshment & Airport Motel Services; and finally, General Consumer Services, such as banking, travel insurance, lockers, baggage service, barber and shoe shine shop, wire service,



travelers information service, candy shop, gift shop, newsstand, and utility services.

Table 3-5

SEATTLE-TACOMA INTERNATIONAL AIRPORT
CONSUMER SERVICES IN THE AIRPORT AREA

Category	Employment	Annual Payroll Dollars
Ground Transportation	195	896,000
Dining, Refreshment and Airport Motels	483	2,278,000
General Consumer Services	42	212,000
Utilities	<u>90</u>	<u>513,000</u>
	810	3,899,000

Source: Planning Department Survey

6. Air Freight Oriented Industries and Commerce

Several industrial and commercial enterprises in the area thank air freight for their existence or, at least, for a substantial increase of their business. Only jobs directly attributable to the Seattle-Tacoma International Airport air freight traffic were recorded, they amount to 744.



In its endeavor to remain within the bounds of factuality, the Planning Department was unable to justify the inclusion of any sizable portion of The Boeing Company

in the impact figures. In its supply of materials and semi-finished products, Boeing leans heavily upon the railways. Also, a substantial portion of its materials and products are flown by military aircraft.

Table 3-6

SEATTLE-TACOMA INTERNATIONAL AIRPORT
AIR FREIGHT ORIENTED INDUSTRIES
AND COMMERCE

Category	Employment	Annual Payroll Dollars
Industries		
Furs	42	287, 000
Chicken Hatcheries	125	682, 000
Perishables	7	35, 000
Flowers and Evergreens	40	218, 000
Aircraft and Electronics	461	2, 731, 000
Miscellaneous	<u>36</u>	<u>199, 000</u>
Subtotal	<u>711</u>	<u>4, 152, 000</u>
Merchandising and Services		
Merchandising	31	171, 000
Services (household moving)	<u>2</u>	<u>11, 000</u>
Subtotal	<u>33</u>	<u>182, 000</u>
Total	744	4, 334, 000

Source: Planning Department Survey

The primary economic impact is summed up as follows:

Table 3-7

SEATTLE-TACOMA INTERNATIONAL AIRPORT
SUMMARY OF PRIMARY IMPACT

Category	Employment	Annual Payroll Dollars
1. Port of Seattle and Federal Agencies	455	3,018,000
2. Air Traffic Generating Factors	733	4,068,000
3. Air Carriers Operations	3,161	24,381,000
4. Local Supporting Services to Air Carriers	107	619,000
5. Consumer Services in the Airport Area	810	3,899,000
6. Air Freight Oriented Industries & Commerce	<u>744</u>	<u>4,334,000</u>
Total	6,010	40,319,000

Source: Planning Department Survey

More than 75 percent of the jobs and almost 80 percent of the annual payrolls of the primary economic impact are generated at and around the airfield.

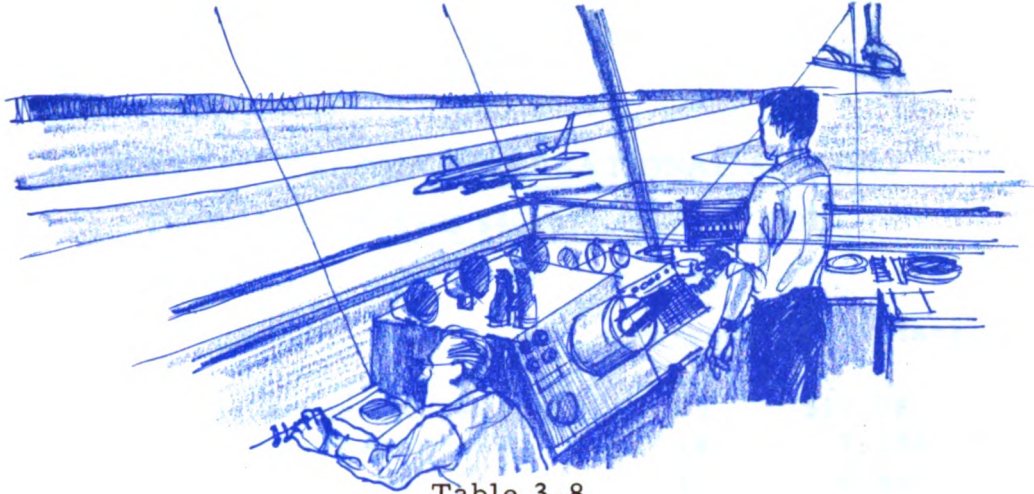


Table 3-8

SEATTLE-TACOMA INTERNATIONAL AIRPORT

LOCATION OF JOBS

	Employment	Annual Payroll Dollars
Employees working on the grounds of the airport	4,180	30,240,000
Employees working in the immediate vicinity of the airport	<u>370</u>	<u>1,864,000</u>
Subtotal	<u>4,550</u>	<u>32,104,000</u>
Employees working else- where in King County	<u>1,460</u>	<u>8,215,000</u>
Total	6,010	40,319,000

Source: Planning Department Survey

Spending habits of the aforementioned employees were investigated:

Table 3-9

SEATTLE-TACOMA INTERNATIONAL AIRPORT
DISPOSAL OF THE \$40, 319, 000 PAYROLL

Item	Percent	Dollars
Food, Beverages, Cigarettes	25	\$10,080,000
Taxes	18	7,258,000
Housing	16	6,451,000
Clothing	10	4,032,000
Auto, Gasoline, Oil	7	2,822,000
Medical, Dental, Hospitalization	7	2,822,000
Entertainment	6	2,419,000
Household Appliances	5	2,016,000
Education	4	1,613,000
Miscellaneous	<u>2</u>	<u>806,000</u>
Total	100	\$40,319,000

Business Volume



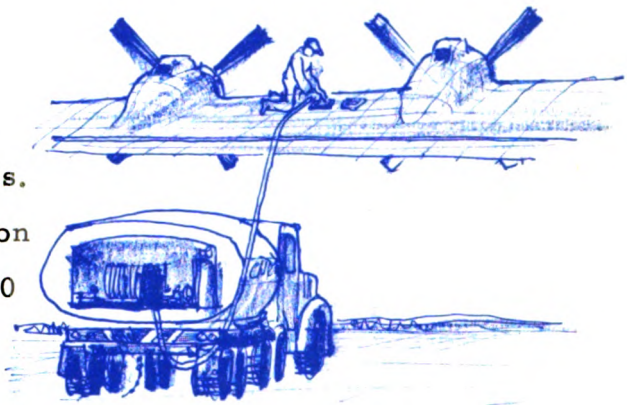
Estimate was made of the operating revenue derived by the airlines from the outbound passengers, airmail, air express, and air freight traffic originating at the Seattle-Tacoma International Airport. Passenger

traffic comprised revenues from the charter business, and excess luggage; the airmail, revenue from the airborne first class mail. The estimate excludes the Seattle-Tacoma International Airport's two foreign carriers. It was concluded that the operating revenue

of the seven domestic carriers earned from the outbound Seattle-Tacoma International Airport traffic amounted to some \$85,000,000.

Considering the disclosed operating flight revenues in the "Aviation Week and Space Technology" Magazine, the revenue generated by the outbound air traffic of the Seattle-Tacoma International Airport represented an important portion of the airlines' total national yearly business. It ranged from 8 to 40 percent of their total operating aviation revenue. The impact of the Seattle-Tacoma International Airport's outbound traffic is particularly felt by carriers flying to Alaska.

Second largest single item is the sales of aviation fuel and oils. About 60,000,000 gallons of aviation gasoline and kerosene, and 370,000 gallons of aviation oils were purchased by the air carriers operating at the Seattle-Tacoma International Airport in 1961. These purchases were valued at \$17,300,000.



Sales, which the Seattle area industrial and commercial enterprises were able to effectuate due to the air freight service, reached \$13,600,000.

The value of the consumer services rendered to the public in the airport area totaled \$11,600,000.

Table 3-10

SEATTLE-TACOMA INTERNATIONAL AIRPORT
VALUE OF GOODS AND SERVICES
GENERATED BY THE AIRBORNE TRAFFIC
IN 1961

Group	<u>Sales, Revenues, Collections</u> Dollars
Public Agencies	3,800,000
Air Traffic Generating Agencies	500,000
Air Carriers Operations	85,000,000
Local Services to Air Carriers	18,500,000
Consumer Services	11,600,000
Air Freight Oriented Industry and Commerce	<u>13,600,000</u>
Total	\$133,000,000

Source: Planning Department Survey

Air carriers based at the Seattle-Tacoma International Airport disbursed about \$45,000,000 for purchase of services and supplies in the Seattle area. Of this sum, \$25,800,000 corresponded to wages and salaries of their Seattle area operational and sales personnel.

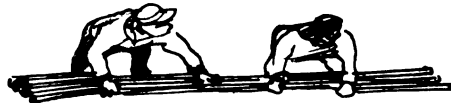
SECONDARY IMPACT

Seattle harbor impact study revealed that every dollar earned by the workers engaged in the Port's maritime trade generated a secondary impact equivalent to at least one dollar of supplementary

income in the Seattle area. The above study concluded that the secondary impact of the harbor's maritime traffic was developed as follows:

- a. An appreciable portion of the earnings of the primary impact group was quickly returned to the local income stream through the purchases of goods and services in the Port District, thus contributing to the creation of further jobs.
- b. Local fabrication and/or marketing of the ocean borne goods accounted for substantial employment in the Seattle area.

In view of what was known about the employment in the local fabrication and marketing of waterborne goods of the Seattle harbor, as well as about the ratio of local spending by the primary impact group, the velocity of money and the job multiplier, the secondary impact of the Seattle maritime transportation was estimated to be equal to the primary impact as far as the number of jobs is concerned.



The secondary harbor impact produced by the airborne traffic of the Seattle-Tacoma International Airport differs from the secondary impact of the Seattle harbor in two respects:

- a. The per capita income of the air transportation personnel is substantially higher than that of persons active in the maritime traffic. Thus, in relative terms, the airline employees surpassed their colleagues in the maritime transportation in that segment of the secondary impact which is induced by local spending of the payrolls.

- b. The harbor study was concerned with the impact of the maritime trade, and paid almost exclusive attention to the movement of waterborne goods. (Ferry passenger traffic was not covered by the study). While the transportation of goods fully dominates the Seattle maritime trade, the speedy transportation of people has been the paramount task of the commercial air transportation, and it is the air passengers residing outside of the Port District who are of vital importance in the generation of the secondary impact of the Seattle-Tacoma International Airport.

In 1961, some 530,000 non-resident air passengers entered the Seattle-Tacoma International Airport. In view of the peripheral location of Seattle a considerable number of these visitors came to Seattle thanks to the conveniences offered by air transportation. A telling proof of this is the burgeoning convention business. Due to the jet transportation and the excellent scheduling of air traffic at the Seattle-Tacoma International Airport, Seattle is rapidly becoming one of the eligible convention cities in the nation. Some 50,000 convention delegates reached Seattle by air last year, and many more are expected in the future.

Another 230,000 airborne travelers called on Seattle for business purposes, and 250,000 non-resident air passengers visited Seattle for personal reasons, primarily tourism, in 1961.

It is estimated that these 530,000 non-resident airborne visitors disbursed more than \$30,000,000 in the Seattle area for downtown accommodations, food, amusements and shopping. An annual injection of \$30,000,000 in the local economy creates an employment equivalent to some 3,000 jobs.

Thus, the local expenditures of the air transportation employees and the spending in the Seattle area by the airborne non-



resident visitors were responsible for a secondary impact of the Seattle-Tacoma International Airport estimated at 6,000 jobs.

TOTAL IMPACT

THE COMBINED PRIMARY AND SECONDARY IMPACTS TOTALED 12,000 JOBS. ON THE BASIS OF 2.6 DEPENDENTS PER JOB (THE EMPLOYEE AND 1.6 FAMILY MEMBERS), A TOTAL OF 31,000 KING COUNTY RESIDENTS -- MEN, WOMEN AND CHILDREN -- RELIED FOR THEIR LIVELIHOOD UPON THE AIRBORNE TRAFFIC OF THE SEATTLE-TACOMA INTERNATIONAL AIRPORT.