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EARLY TRANSPACIFIC AVIATION
1930-1941

A THESIS SUBMITTED TO THE GRADUATE SCHOOL OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS
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This paper is the story of how the vast stretches of the Pacific had been plotted from the air a decade before hostilities broke out between the United States and Japan. The Army and Navy were able to draw upon the vast knowledge of these commercial fliers in order to conduct the far-flung air operations that characterized Pacific aviation. There has been, to date, little research into the expansion of the United States commercial aviation into the Pacific region. Sources are limited and often fragmentary. Many of the details are unavailable for reasons of national security and commercial policy. The history of Pacific aviation is further obscured by the relationship of the United States Government toward her commercial air carriers. This relationship is a question that had been vigorously debated by economists, historians, and the carriers themselves.

Transpacific aviation did not begin with the establishment of actual operations across that ocean. It began in 1927 with the establishment of the first permanent international air line in the Caribbean area by an American company and the first successful crossing of the Pacific in the same year. Its antecedents may also be found in the technological development of the United States aircraft manufacturers and allied industries. The technical developments which occurred during the advance across the Pacific will not be considered to any great extent other than to mention them whenever applicable.
The author is indebted not only to Rear Admiral Frank T. Kenner, United States Coast Guard, for his interest and time in drawing out some of the details in the early expansion of commercial air operations across the Pacific, but to others who actively participated in building the transpacific air route but now desire to remain anonymous.

T. P. B.

August, 1958
TABLE OF CONTENTS

PREFACE .......................................................... 11

LIST OF TABLES .................................................... vi

CHAPTER I. THE PACIFIC, AN INTRODUCTION
Aviation in its Infancy ......................... 1
Era of Spectacular Flights .................... 2
Transoceanic Aviation ....................... 3
Geographical Description of the Pacific . 5
Transpacific Commerce ....................... 9
The Need for Transpacific Air Routes .... 10
Comparison of Surface and Air Transport . 12
National Character of International Aviation ............. 14
Early Flights in the Pacific, 1910-1935 ... 15

CHAPTER II. AIR POLICY OF THE UNITED STATES
The Need of an Air Policy .................... 21
Elements of an International Air Policy ...... 23
Governmental Support of Civil Aviation .... 27
Formation of an United States International Air Policy 32
Civil Aeronautics Act of 1938 .............. 42
National Defense and Transpacific Aviation 46
Federal Aid in the Pacific ................... 48
The United States and International Aerial Organizations . 49
International Aspects of Transpacific Aviation ........ 52

CHAPTER III. SPANNING THE PACIFIC
Early Transoceanic Flights .................. 58
Initial Stages of Pan American's Transoceanic Development ... 59
The Great Circle Route ...................... 61
Alaska ........................................... 62
China ........................................ 65
Russia .......................................... 68
Central Pacific Route ...................... 72
Midway Island ................................ 74
Wake Island .................................. 75
Guam Island .................................. 75
The Philippines .............................. 76
CHAPTER III. SPANNING THE PACIFIC (continued):

- California Terminus ........................................ 77
- Hawaii ......................................................... 77
- North Haven Expedition ..................................... 78
- Development of Transoceanic Seaplanes .................... 81
- Pacific Survey Flights ....................................... 82
- Martin M-130 Seaplanes ..................................... 83
- Radio Communications ........................................ 85
- Air Mail Contract ............................................. 85
- Pan American-Matson-Inter-Island Agreement .............. 87
- First Scheduled Pacific Flight ................................ 89

CHAPTER IV. SOUTH TO THE ANTIPODES

- Background .................................................... 91
- Initial Plans .................................................. 92
- The Coman Expedition ....................................... 93
- New Zealand Discussions .................................... 96
- Kingman Reef .................................................. 98
- Tutuila, American Samoa (Pago Pago) ....................... 98
- South Pacific Survey Flights ............................... 99
- Abandonment of the South Pacific Route .................... 100
- "Scramble for Air Bases" .................................... 101
- Line Island Project ......................................... 101
- Phoenix Islands, Canton and Enderbury ..................... 108
- Reopening the South Pacific Route ......................... 116
- North Haven Expedition .................................... 117
- Noumea, New Caledonia ...................................... 118
- South Pacific Survey Flights ............................... 120
- Suva, Fiji ...................................................... 121

CHAPTER V. DEVELOPMENT OF SERVICE IN THE PACIFIC--1936-1941

- Initial Operations ........................................... 124
- Supply .......................................................... 125
- Island Bases .................................................... 127
- Air Cargo ....................................................... 128
- Inauguration of Passenger Service ......................... 129
- Hong Kong and Macao ....................................... 129
- Manila-Hong Kong Shuttle .................................. 130
- Through Traffic, San Francisco-Hong Kong ................. 131
- Loss of the Hawaii Clipper ................................ 132
- Boeing B-314 .................................................. 133
- Treasure Island ............................................... 136
- Boeing B-314A ................................................ 138
- Increase of Traffic in the Pacific ......................... 139
- Singapore ...................................................... 140
- Manila-Hong Kong-Singapore Shuttle ...................... 143
- December 7, 1941 ............................................. 144
- Quest of a Transoceanic Land Plane ...................... 146
CHAPTER 1

THE HISTORY OF AVIATION


eventual purpose Flight is a product of the human mind. Man's curiosity and determination are qualities that have driven the development of flight. The early explorers of flight, from the Wright brothers to the latest advancements in aerospace technology, have been driven by a desire to understand and control the forces of nature. Their efforts have led to the development of aircraft that can soar through the skies and explore the vastness of space. This list contains the references to the tables in the document:

LIST OF TABLES

TABLE I. AVERAGE ANNUAL NUMBER OF TROPICAL CYCLONES BY ISLAND GROUPS ................... 9

TABLE II. COMPARISON OF PACIFIC AIR AND SURFACE TIME ............................................... 13
CHAPTER I

THE PACIFIC, AN INTRODUCTION

Successful powered flight is a product of the twentieth century, although its antecedents may be traced back to the legendary flights of the Chinese Emperor Shun (2258-2208 BC). Modern aviation was born on December 17, 1903, when the Wright brothers made their epic flight at Kitty Hawk, North Carolina. Within six years the airplane had been exhibited throughout the civilized world and had generated much speculation as to its possible uses. Much of this interest, however, was more a matter of curiosity than one of demonstrating any practical use of the new machines.

World aviation received its first great stimulus in World War I. The development of aircraft in this period was extremely rapid; from the flimsy "baling wire" airplane of 1914 and the "flying coffin" of 1917 to the relatively efficient aerobatic craft of 1918. The exploits of the men and machines during the war were so publicized and romanticized that they captured the public's imagination and directed its attention toward the potentialities of aviation. Thus, at the end of the war with the release of many pilots and a surplus of aircraft, the United States and Europe witnessed a popular boom in aviation.

During this era enthusiasts in the United States introduced the airplane to the public by means of individual exhibitions, commonly known as "barnstorming." These
consisted of short passenger hops or charter flights of varying types. A short-lived scheduled air mail service was operated by the Post Office Department and the United States Army in 1918. During the years 1919 to 1924, a commercial airline operated a passenger service with seaplanes between New York City and Atlantic City in the summer, and from Key West to Cuba in the winter. For the time being, large scale commercial operations were ignored.

The period from the end of World War I until 1938, which saw all sectors of the earth conquered from the air, was characterized by many spectacular flights, culminating in the Atlantic crossing by Douglas "Wrong-way" Corrigan in 1938. Although the majority of these flights were sponsored by the military, they were of value to civil aviation in demonstrating that the airplane was a reliable means of transportation and that ocean wastes could be successfully crossed. Consequently those in the aviation industry foresaw no limits to the physical expansion of aviation throughout the world. All that was lacking, prior to the 1935 Pacific crossings, was adequate equipment with which to work.

Transoceanic aviation received its first impetus in 1927, when most of the important air lanes were pioneered; so that at the close of the year, there were no broad stretches of ocean that had not been successfully flown more than once. The most notable event was Charles A.
Lindbergh's solo crossing of the Atlantic on May 20, 1927. Of equal importance, but overshadowed by Lindbergh's feat, was the opening of the Pacific air track from California to Hawaii by United States Army Lieutenants Lester J. Maitland and Albert F. Hagenberger on June 28-29, 1927, closely followed by two other successful California-Hawaii flights. A few months after the early Pacific crossings a new company, Pan American Airways, on October 19, began operations between Key West, Florida, and Havana, Cuba, thus opening the era of United States commercial international overseas aviation.

During this period other events were taking place which were to have a profound effect upon the development of American aviation. Not the least of these was the rise of Federal interest in civil aviation, as seen in the passage of the Air Mail Act of 1925, the Air Commerce Act of 1926, and the Foreign Air Mail Act of 1928. Each of these measures greatly encouraged aircraft operators and manufacturers to expand operations. This encouragement, which was in the form of financial guarantees by the government (mostly in the guise of airmail payments), lessened financial risks that had formerly existed. The stage was now set for the development of United States international air service on a large scale.

Transpacific aviation forms a broad subject which cuts across the fields of geography, international relations, economics, and engineering. Geographically it involves the
most extensive single feature on the earth's surface, which might have been expected to delay development in the Pacific until after that of the Atlantic region. This might have seemed the more certain in view of the larger extent of cultural and economic interchange which crossed the waters of the Atlantic. Yet in the critical period of the 1920's and 1930's national rivalries, plus opposing political ideologies and conflicting commercial ambitions, prevented the Atlantic nations from agreeing upon the conditions, terminals and other arrangements necessary to the establishment of regular transoceanic air travel.

Even in the Pacific, this development was hampered and delayed by narrow interpretations of national sovereignty, only slowly adapting to the concept of an air age. National air space was at first jealously guarded, and in the thirties there appeared to be increasing fear that certain states were hiding military motives behind the expansion of what were apparently purely commercial aviation companies. The general result was that transpacific aviation was only beginning to realize some of its immense possibilities when orderly peacetime growth was interrupted by the outbreak of the second World War. The war years witnessed the first tremendous expansion of international air services, among the friendly nations, unhampered by questions of economy and exclusive national privileges. The developments of the war years only proved the sound logic upon which the first international operators had built their business before the war.
For the purpose of this study the Pacific Basin may be considered to be bounded on the north by the Bering Strait, the 56-mile-wide water passage separating Alaska from Siberia. The southern boundaries will run along the southernmost coasts of Australia and New Zealand, though a strictly geographic boundary would probably extend to the Antarctic Ocean. On the east our Pacific Basin is bounded by the western shores of the Americas and on the west by the eastern shores of Asia and the islands of Indonesia.

This area forms roughly the shape of a triangle, its apex at the Bering Strait, and encompasses a total area of some 63,634,000 square miles.

The term, North Pacific, as used in this study, is the area of aerial operations, actual or projected, between the state of Washington, Canada, Alaska, Siberia, China, and Japan above 30° North. The term, Central Pacific, includes the area of operations from California to the Orient via the islands of Hawaii, Midway, Wake, Guam, and the Philippines. The South Pacific includes the route from Hawaii to New Zealand and the island groups that lie between these two points.

The Eastern and Western Pacific are separated by 150° West longitude. The eastern portion of the Pacific is almost devoid of islands, except for the few island groups which lie just off the coasts of North and South America.

The Western Pacific is characterized by multitudinous islands
that extend from Kamchatka Peninsula in the North, to the Northeast coast of Australia with the Melanesian, Polynesian and Micronesian island groups filling in the center. These island groups of the Western Pacific have formed a natural bridge of stepping stones, located as if they were so placed in order that man could fly the Pacific.

The northern route, via the Great Circle, the shortest route between the United States and the important commercial centers of the Orient, was surveyed for commercial operations by Pan American from 1930 through 1934. However, weather conditions in the North Pacific were such that bases at frequent intervals were essential to provide communication facilities and to allow for the relatively short range of the transport aircraft of that period. Unfortunately political antipathy among Russia, Japan, and the United States prevented conclusion of any agreements which would insure the necessary international cooperation in the use of the bases, thus stopping development of the Great Circle route at that time.

The Central Pacific route was favored by generally stable and predictable weather, especially in the western half. But this section also included the longest overwater stretch of the Pacific, that of 2,400 miles between California and Hawaii. This was believed to be a most

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1 Letter from Dr. David I. Blumenstock, Pacific Area Climatologist, United States Weather Bureau, to the author, May 15, 1958.
unfavorable sector by early fliers of the Pacific because of its heavy cloud formations, but later experience showed that this was not the case.

The climate along the Central and South Pacific routes, with the exception of the western sector of the Central Pacific, offered relatively consistent weather and winds. The Central Pacific route, for the most part, followed the climatic system of the Northeast Trades, a belt, characterized by its steadiness, extending from about 5° to 20° North, and marked by light rainfall with temperatures normally ranging from 70° to 80° Fahrenheit. The South Pacific passage was through the Northeast Trade Wind Belt, through the equatorial Doldrum Belt, the Southeast Trades, the Horse Latitudes, and into the prevailing Westerlies. The Doldrum Belt, characterized by relatively light wind, moderate heat and humidity, and localized excessive rainfall, presented little or no difficulty for flying. The Southeast Trades were similar in nature to the Northeast Trades. The Horse Latitudes were characterized by generally fair weather and light steady winds offering ideal conditions for aircraft operation. The Prevailing Westerlies, characterized by their strength and persistence, were the

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2 Honolulu Advertiser, June 2, 1928.

3 During the 19th Century ships in this latitude (30° South) often were becalmed in hot dry weather for lengthy periods. Any animals or stock were dispatched in order to conserve the water supply, hence the term.
Occasional tropical cyclones and typhoons have had little effect upon either the South Pacific or the Central Pacific routes, with the exception of Guam and the Asiatic Terminals. In spite of the fact that there were about 130 intense storms a year in the Pacific, it was fortunate that the natural island stepping-stones for air bases generally lay outside the areas of prevalent cyclone breeding grounds and routes. Only the Asiatic terminus, Hong Kong and an area extending from Manila towards Guam in the Marianas Group, were in an area of severe storms, which averaged about ten per year, mostly between May and November. The southern half of the South Pacific route lay in a cyclone belt; however, the cyclones of this area were less numerous and severe than those of the Northern Pacific and caused little or no delay in air operations.

Generally speaking, with the exceptions noted, the routes of transpacific aviation were located in areas of mild and equitable climate which could be counted upon to allow practically year-round operation without any

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4 Otis W. Freeman, ed., Geography of the Pacific (New York, 1951), Chapter I.


TABLE I. AVERAGE ANNUAL NUMBER OF TROPICAL CYCLONES BY ISLAND GROUPS

<table>
<thead>
<tr>
<th>Island Group</th>
<th>Average Number of Annual Cyclones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>10</td>
</tr>
<tr>
<td>Philippines#</td>
<td>9</td>
</tr>
<tr>
<td>Hawaiian Area#</td>
<td>1</td>
</tr>
<tr>
<td>Marianas#</td>
<td>1</td>
</tr>
<tr>
<td>Marshalls</td>
<td>0.2</td>
</tr>
<tr>
<td>Samoa#</td>
<td>2</td>
</tr>
<tr>
<td>Tonga</td>
<td>2</td>
</tr>
<tr>
<td>Fiji#</td>
<td>2</td>
</tr>
<tr>
<td>New Caledonia#</td>
<td>3</td>
</tr>
</tbody>
</table>

* Visher, "Tropical Cyclones of the Pacific."

# Denotes islands used as bases by Pan American.

Transpacific trade before the air age dealt almost exclusively with the movement of cargo between the United States and Asia, for Europe's trade with Asia did not move across the Pacific, but by the shorter route through the Suez Canal. Pacific trade was complicated by wide divergence in purchasing power, standards of living, political and socio-economic systems among the bordering nations. For the most part Asian nations imported bulk

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7 This is not to assume that these routes are storm-free, for hurricanes, while not common, do occur. For example, Wake Island was swept by a hurricane on October 18, 1940, which resulted in the destruction of seventy-five per cent of the base built by Pan American in 1935. Honolulu Advertiser, October 20, 1940.

8 Walter A. Radius, United States Shipping in the Transpacific Trade (Stanford University, 1942), p. 3.
cargoes of wheat, lumber, petroleum, scrap-iron, wood pulp, fertilizer, and cotton. The United States imported rubber, tin, silk, copra, vegetable oils, sugar, and miscellaneous tropical products. These items were economically suited to slow surface cargo shipping rather than to the small express shipments characteristic of air cargo movements.

Prior to 1941, Japan, the leading power in the Far East, absorbed seventy-five per cent of imports and furnished twenty-five per cent of the exports for the entire area. Her commercial prominence and geographical position dominated local trade throughout the Far East. Following the Meiji Restoration in 1868, the Japanese had become increasingly aggressive, attempting to gain political and economic hegemony over the entire Western Pacific region, either by economic infiltration or by overt military action. This trend was accentuated by the seizure of Manchuria in 1931, and the various "incidents" on the Chinese Mainland which culminated in the Sino-Japanese war beginning in 1937.

From 1931 on, it became more and more essential to the United States that a rapid and secure means of communication be established across the 10,000 mile stretch of ocean between Asia and Oceania and the nations bordering the Pacific on the East. The increasing dominance of Japan in the political and economic life of the Far East, its

Ibid., p. 132.
Bellicosity and threat to the "status-quo" of the colonies and nations in the Western Pacific made this imperative. Unfortunately, the direct linking of the United States and Japan by air was prevented by poor American-Japanese relations and fear on the part of the Japanese that American commercial aviation was merely "military preparation in the guise of civilian enterprise." Perhaps the events of November and December 1941 would have been far different if a direct contact by air could have been established between these two nations by the economists and not hindered by the militarists.

Prior to the establishment of transpacific aviation, there existed only one rapid means of communication, the transpacific telegraphic cables. These cables were opened at the beginning of the twentieth century by the United States and Great Britain. By 1904 the American commercial Pacific Cable Company had established direct connections between San Francisco and Manila; subsequently a branch line connected with Shanghai. The British cable, completed about the same time, stretched from Vancouver in British Columbia to New Zealand and Australia.  

10 Honolulu Star-Bulletin, March 14, 1935. Joseph C. Grew also makes this point in his Turbulent Era, A Diplomatic Record of Forty Years, 1904-1945 (Boston, 1952), II, p. 202. At the same time a Japanese Trade Commission to the United States maintained that Japan's attitude was not fearful, that "we are watching with the eyes of the economist, not the militarist." Honolulu Star-Bulletin, June 7, 1935.

The British and American cables, interestingly enough, approximated the routes of the flying boats to come. Another parallel between the air and cable track was the diplomacy involved when each country sought rights and privileges for cable bases to the exclusion of other nations. Also, questions concerning the sovereignty of Pacific cable bases arose as was the case in the scramble for air bases 30 to 35 years later.

By the thirties, then, the Pacific offered many of the political, economic, and geographical aspects that were necessary for the establishment of an international airline. It had suitable climatic conditions, the necessary potential bases, a transoceanic trade, and a political situation that demanded rather constant attention and contact between the capitals of the leading Pacific nations.

Differences between surface and air transport were at once obvious, yet their significance was not clearly understood. The comparative speed of air transportation over other forms was, probably, the most outstanding and commonly understood factor. The flying speeds of aircraft in the thirties and forties, 75 to 100 miles per hour, in terms of time as against distance was much more economical as compared to the relatively uneconomic speed of the oceanic luxury liner of 20 to 25 knots and the freighter's plodding, but economic speed of 10 to 12 knots. Unfortunately, transpacific aviation could not at first avail itself
of the advantage of direct flight; limited range of the
aircraft forced an island-hopping route rather than one
which followed the more direct Great Circle air track.
Aircraft also could operate in a relatively independent
fashion over the terrain traversed. They could climb over,
go around, or return to safer areas in case of hazardous
conditions, whereas surface vessels were forced to stay more
or less on course. As distances traveled increased, the
factor of speed became a more and more important considera-
tion.

**TABLE II. COMPARISON OF PACIFIC AIR AND SURFACE TIME***

<table>
<thead>
<tr>
<th>Route</th>
<th>Elapsed Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Air (Hours)</td>
</tr>
<tr>
<td>San Francisco toHonolulu</td>
<td>19:45</td>
</tr>
<tr>
<td>San Francisco to Auckland</td>
<td>103:45</td>
</tr>
<tr>
<td>San Francisco to Manila</td>
<td>127:45</td>
</tr>
</tbody>
</table>


Transportation by air — if figured on a straight
mileage basis — was more expensive than by surface. The
choice between surface or air passage depended on speed or
time more often than on cost. Thus, air transportation
might have become directly competitive with surface, yet
more often than not, it created new business for itself
rather than taking business away from surface shipping. For
example, a government official or business executive might
be able to spend a week or two away from his desk to
personally deal with a problem, whereas it might be impos-
sible for him to devote a month or two as he would have to
do, if he used the fastest surface transport. 12 A similar
situation existed in the case of special kinds of cargo and
mail, where time established the relative value of transport
costs.

An inherent danger in flight as compared to relatively
safe surface travel has been cited in some cases as dis-
couraging air passenger traffic, although this reasoning has
proved to be false. During the entire period of Pan
American's Pacific operations from 1935 to December 7, 1941,
only two "clippers" were lost, only one of which was carrying
passengers. 13 Publicized safety features and high standards
of maintenance, demanded by both the airline and the govern-
ment, have aided greatly in dispelling this fear of flying.

Transpacific aviation rendered more service to the
nation than merely being a vehicle for fast and efficient
communication. National prestige and pride were enhanced by

12 From a compilation of various surveys conducted for
several years, the average revenue passenger was described as
"a well-to-do man about forty years old. He is an executive
and is traveling for business purposes." William M. Grossman,

13 The Samoan Clipper was lost on January 31, 1938 on a
cargo trip to the Antipodes; the Hawaii Clipper was lost on
July 26, 1938, on a regular passenger flight to the Orient.
No cause can be given for these accidents as neither passen-
gers, crew, nor aircraft were recovered. Author's check of
cancellations occurring as a result of oceanic crashes has
shown no drop in the passenger load that can be attributed
to these or similar accidents.
the mere fact that a company under a national flag was conducting a far-flung operation and advertising the effectiveness of a national aviation industry. In the realm of national defense an international air line, as well as those in domestic service, contributed many things to the benefit of the national defense. Airmen gained general experience which accrued from the ordinary day-to-day operation in transoceanic flying, including weather forecasting, weight and balance computing, crew training, and general services.

Approximately seven years after the Wright's epic flight powered flight came to the Pacific Basin. The first recorded flight occurred in Melbourne, Australia, early in 1910. In the same year another flight of 3,200 yards in four minutes was recorded. Shortly thereafter Hawaii

14 When Japan attacked the United States, Pan American's Pacific Division was the only American transoceanic company flying the Pacific. On December 11, 1941, it began priority passenger and cargo flights between San Francisco and Honolulu for the Navy. In addition it made available to the military such technical services as the use of direction-finding equipment, communications networks, and transpacific weather forecasting procedures. At the onset such skills were completely in the hands of Pan American personnel, as were, also, route manuals covering operating procedures, aids to navigation, landing fields, and surveys of old and new routes. In fact Pan American taught the military how to operate a transoceanic airline. Pan American Airways, Incorporated, "History of the Transpacific Air Services to and Through Hawaii, Exhibit PA-2," Civil Aeronautics Board Docket Numbers 851 et al., New York, 1944, pp. 46-48. Hereafter cited as PA-2.

witnessed its first powered flight, of some minutes duration, before an estimated crowd of 3,000 people. 16

The first attempts to fly the Pacific were made in 1924 and 1925. These flights are of particular interest not only because they were "firsts" in Pacific aviation but because they pioneered the routes that were later to be used by Pan American. On April 6, 1924, a United States Army flight of four planes left Seattle, Washington, on a round-the-world flight via the Aleutians, Japan, and Hong Kong, approximating the Great-Circle route. In 1925 the Navy's ill-fated Pacific crossing was a modest version of a plan first proposed by Doctor David Stead, an Australian scientist, and later conveyed to Rear Admiral W. A. Moffatt, then Chief of the Bureau of Aeronautics, United States Navy, by Alexander Hume Ford of the Pan-Pacific Union. In essence, this plan had proposed that a trail be blazed for commercial aviation by the Navy in conjunction with fleet maneuvers to be held in the summer of 1925. It would include stops at Honolulu, Midway, Wake, Guam, Japan, Manila, Timor, Port Darwin, Sydney, Samoa, before returning to Honolulu. 17 The project was finally reduced to the flight made by Commander John Rodgers from San Francisco to Honolulu. Commander Rodgers departed from San Francisco on August 31, 1925, and

16 Honolulu Advertiser, January 1, 1911.

17 Harold B. Miller, Navy Wings (New York, 1942), pp. 323-324.
flew 1,995 miles of the 2,400 mile route when he was forced down by a fuel shortage. He sailed the balance of the distance by sea, using fabric ripped from the wings of his seaplane as jury sails.

The first successful air crossing of the California-Hawaii route was completed on June 28-29, 1927, in 25 hours and 48 minutes by two United States Army pilots, Lieutenants Lester J. Maitland and Albert F. Hagenberger. This flight was notable for two reasons: it was the first successful non-stop flight over this route, and it was the first overwater flight utilizing the radio beam. On July 14-15, 1927, the first civilian crossing was made by Ernest L. Smith and Emory Bronte. The elapsed time was 25 hours and 30 minutes, 18 minutes less than it had taken the Army pilots in the preceding month. However, this flight was abruptly terminated thirty miles short of Oahu when the airplane was forced down on the island of Molokai by a fuel shortage.

Perhaps the most tragic of early aviation events was the ill-starred Dole Race between California and Hawaii in 1927. This race was sponsored by James D. Dole of Hawaii, who posted prizes of $25,000 and $10,000 for the winners of the first transoceanic air race. Arthur Goebel and William

V. Davis took first place, Martin Jensen and Paul Schluter, second, the only two planes to finish out of eight that started. Three fliers were killed in crashes before the start of the race, and seven were lost at sea. The winning time was 26 hours and 17 minutes from Oakland to Hawaii.

This race was announced prior to Maitland and Hagenberger's flight and was intended to stimulate transpacific aviation. Thereafter the Pacific was crossed without too much difficulty. However, routine flights were not known until January 10-11, 1934, when the first of many successful mass-flights was flown between California and Pearl Harbor by the United States Navy.

Prior to the establishment of Pan American's commercial services over the routes south and west of Honolulu, these areas had been relatively ignored by Pacific fliers. The air track to the Antipodes had been flown only twice. From May 31 to June 9, 1928, the Southern Cross, with Captain Charles Kingsford-Smith, C. Ulm, H. W. Lyon and J. Warner, flew from Oakland to Sydney, Australia, stopping only at Hawaii and the Fiji Islands. Sir Charles and Captain P. C. Tayler again used this route from October 20 to November 4, 1934, when they flew from Brisbane, Australia, to Oakland, California.

The air route west of Honolulu was pioneered by United States Navy fliers, who conducted routine patrol flights from Pearl Harbor to Midway Island and French Frigate Shoals 20 during the thirties. There was one commercial aerial flight that crossed the Pacific from Tokyo to Los Angeles before Pan American. In 1929, the German dirigible, Graf Zeppelin, during the course of a 21-day trip around the world, carried commercial passengers and mail over this route. This, however, was the only flight of this nature ever conducted over the Pacific. 21

In the decade from 1925 to 1935 the Pacific had been conquered in a series of record-breaking experimental flights that proved that the far reaches of the Pacific were not immune to the aviator. These flights were, however, spectacular rather than scheduled operations. It was not until Pan American established its Pacific air track that such flights became ordinary. Although Pan American's flights were notable undertakings, they could not be considered spectacular because they were planned operations.

20 According to Edwin H. Bryan, Jr., Bernice Pauahi Bishop Museum, Honolulu, the correct designation of these shoals is French Frigates Shoal, however the United States Board on Geographic Names' Gazetteer lists it as French Frigate Shoals. The Sunday Advertiser, September 29, 1957.

21 With some exceptions during the twenties and thirties there were many flights that affected the Pacific Basin but few attempted to span the vast stretches of the ocean. Rather they flew around the land periphery of the Pacific so they cannot be considered as transpacific flights as defined in this paper.
that flew by a schedule computed to the minute. When that
compagny began its Pacific flights, it was not flying into a
sphere unknown in the company's experience, for Pan American
had been flying over the Caribbean Sea since 1927 and was
familiar with over water operations. Before the first
"clipper" ever reached the Pacific, tests in the Caribbean
area had proved conclusively that commercial operations over
the broad expanses of the Pacific would be feasible.22

Unfortunately, however, the majority of this legislative activ-
ity was domestic in nature, leaving the international carriers
in no position to accommodate with their own ability.
However, as a result of being ignored by Congress, the
international carriers were given some of the federal aid
given to the domestic carriers. When the Civil Aeronautics
Act was passed in 1938, the whole American aviation industry
was under a relatively unified and centralized control.
The airlines could now expect a continuity of policy under
the government, and accompany it with a sense of satis-

22 See Appendix A, Air Routes in the Pacific and Appendix
B, Idealized Diagram of Pacific Prevailing Winds.
CHAPTER II

AIR POLICY OF THE UNITED STATES

The purpose of this chapter is to present a brief study of the air policy of the United States, and to sketch the formation of an international air policy and its effect upon the establishment and development of transpacific services.

Until the passage of the Civil Aeronautics Act of 1938 the American aviation industry was in serious straits, one of the major problems having been frequent changes in governmental policy through legislative enactment. As a result of this ambivalent policy, aviation companies were unable to count on long-range developmental schemes. Fortunately, however, the majority of this legislation dealt with domestic aviation, leaving the international carriers to develop at a rate commensurate with their own ability. However, as a result of being ignored by Congress, the international carriers were denied some of the Federal aid given to the domestic airlines. When the Civil Aeronautics Act was passed in 1938, the whole American aviation industry came under a relatively unified and centralized control. The airlines could now expect a continuity of policy under which they could expand and operate with a reasonable

1 House Reports, 78 Cong., 1 sess., no. 124, p. 3.
certainty as to the reaction of Washington.

The international air policy of the United States did not necessarily arise because of a spontaneous recognition on the part of government that a policy was required for the best interests of the nation. Instead this development would seem to have had its origins in some very effective lobbying by a number of special interest groups. A policy was laid down only when Congressional action was made to seem absolutely necessary for the good of the nation as a whole. Ample precedent for this type of legislation could be found in the United States merchant marine policy. 3

Undoubtedly, legislation affecting the aviation industry was

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2 In order to avoid the legislative interference that had crippled the aviation industry previously, no further legislation concerning the airlines was passed up to 1942. It was felt that it would be advisable to withhold any Congressional action until a reasonable time had passed, in order to observe how effectively the Civil Aeronautics Act of 1938 functioned. Ibid.

3 As described by Paul M. Zeis: "The first element in the formulation of a policy is the existence of one or a number of groups desirous of promoting their own welfare and anxious to secure Government aid in this endeavor. The groups, organized in trade associations or similar agencies, endeavor to persuade the legislative authority that the promotion of their welfare benefits the nation as a whole. They attempt to show that laws aiding them will produce economic advantages for other groups on such a wide scale that the interests receiving benefits are truly national in scope. Thus, shipping lobbyists have assumed that the American merchant fleet contributes to national defense and trade promotion, that both these are genuine national interests because they benefit so large a portion of the population and, consequently, that legislation increasing an American fleet deserves the support of every lawmaker interested in the betterment of his country." American Shipping Policy (Princeton, 1938), pp. 206-7.
enacted because of the sponsorship of various pressure groups, such as aircraft construction firms and allied industries, aircraft owners and operators, and labor. Other companies that had a vital interest in aircraft policy were importers and exporters, the Army and Navy, the Postal Department, the industries which served aircraft operations, and the public, which, in the last instance, had to pay for the aid given. Legislation of this nature was held, consequently, to develop commercial aviation, to protect and promote the aircraft industry, and to regulate it for the benefit of the nation. Therefore, international air policy was not an independent program adopted by a board, an authority, or by the government. At times the objectives of the policy and the means to attain them caused controversy among the carriers that tended to hamper rather than speed the development of our international airlines.

American international aviation and aircraft producers had to compete directly with foreign nations in a competitive market; hence they urged passage of measures designed to offset competitive disadvantages by means of direct governmental assistance. Fortunately, the United States aviation industry and its products had been recognized as second to none on the international market, so technical competition was not a particular problem. As further protection, however, laws giving United States operators exclusive operating privileges to and from America's shores and
between her territories were the rule.

Federal aid to aviation then included subsidies, technical aid and assistance, and discrimination against foreign competitors. Subsidies, in the guise of mail payments, were pecuniary aids given to the carrier to enable it to overcome disadvantages it met in foreign competition. These subsidies, therefore, assisted in the establishment of new airlines, aided in the establishment of airlines for reasons of national defense, and helped to maintain operations over essential aerial routes. The use of subsidy payments, always a controversial matter, led to much disagreement and friction among some of the American carriers, especially over questions of favoritism or discrimination. Subsidies were held justified for infant industries, national social welfare reasons, and national defense. Infant industry payments were awarded for the establishment of new routes, however, often without consideration as to whether the new route would be desirable from the point of view of future traffic and whether it would be able to operate without future assistance. Social justification was a broad area which included such items as the postal service, the needs of the communities to be served, and the creation of new occupations.

The needs of national defense, some of which are fairly obvious, have often been cited in the development of both Pacific and Atlantic services. Included in this
category were such factors as speed of communication, training and technical know-how that could be passed on to the military establishment, route surveys, and knowledge of areas usually barred to military personnel. One writer, viewing the question of subsidy and national defense, remarked that the economic good health of the airline in peacetime was the first prerequisite to an adequate national defense. Such was not the case in the development of Pan American’s early Pacific service. However, the operational losses on the company was counteracted by its profitable Latin American service.

Technical aid was rendered to both domestic and foreign carriers in a variety of ways, although it is patent that the favored domestic carriers received by far the most. Services of the United States Weather Bureau, the use of municipal or Federal airports, mail subsidies, and a host of other benefits were rendered by government on both national and local levels. United States international carriers, however, were unable to avail themselves of any but a modicum of the above services for obvious reasons of political and physical barriers.

However, discrimination, as a policy, was used to aid United States international carriers. Before World War II, British, Dutch, German, and Japanese airlines were denied

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permits to fly into United States territory for a variety of reasons. The Dutch Koninklijke Luchtvaart Maatschappij (Royal Netherlands Airlines) repeatedly attempted to establish service between its Melanesian possessions and the Philippines. This service was blocked by a fear of having Japan claim equal privilege. In the Caribbean area permission to fly to the United States was denied the Dutch in 1937, because such service would parallel that offered by Pan American. When British and Dutch companies sought permission in 1938 to use Hawaii as an airbase, they were denied access ostensibly for reasons of national defense. It was felt that Hawaii's defenses would be unnecessarily exposed to the view of foreign airlines. This fear of exposing Hawaii's defenses dated back at least to 1914, when the Governor of the Territory of Hawaii, Lucius E. Pinkham, refused permission for Japanese aviators to fly in areas adjacent to Forts Ruger and DeRussy. This restrictive policy was not often used, because in the period to December 7, 1941, the United States possessed the only flight equipment that could efficiently cross the oceans. In addition retaliation or counter-measures adopted by other nations tended to keep the use of this policy to a

5 New York Times, April 21, 1940.
6 Ibid., May 4, 1937.
7 Oliver J. Lissitzyn, "The Diplomacy of Air Transport," Foreign Affairs, XIX (October, 1940), 166.
8 Pinkham to Lane, November 23, 1914, Pinkham Letters, Commissioner of Public Archives, Territory of Hawaii.
minimum.

The United States commenced its program of aid to civil aviation with the establishment of the National Advisory Committee for Aeronautics (NACA) on March 3, 1915. The NACA, with its headquarters at Langley Field, Virginia, was long recognized for its outstanding work in aeronautical research. The Committee was composed of representatives of the Army, Navy, Civil Aeronautics Authority, other governmental agencies and staffs, and civilian personnel acquainted with aeronautical research.

The next step toward government assistance to aviation came in 1918. On March 15, 1918, the Post Office Department and the Army Air Force inaugurated an air mail service that "was a preposterous failure, which heaped ridicule upon both the Air Service and the Post Office Department." Two months later the experiment was abandoned. This experience and later two similar ones, convinced the government that air mail operations could be much more efficiently carried on by commercial operators.

A third move toward government support of aviation occurred indirectly in 1925 in connection with the Billy Mitchell affair. In his statements General Mitchell scored the "criminal negligence and almost treasonable administration of the national defense by the Navy and War

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Departments. He suggested the need for an air secretary to administer a separate air force and sponsor civil aviation. As a result of this publicity President Coolidge appointed an Aircraft Board headed by Dwight W. Morrow to investigate the status of American aviation. The findings of the Board led to Congressional action as seen in the passage of the Air Commerce Act of 1926 and a five-year developmental program in aviation for the Army and Navy. Another step was the enactment in 1925 of the Kelly Act -- the nation's first air mail law. It was designed to promote and encourage civil aviation and to allow the Post Office Department to offer mail contracts to commercial airlines. Aviation interests were thus provided with a financial incentive to initiate and expand airline operations. Prior to this time air mail services had been conducted directly by the Post Office Department, which operated one

10 National Committee to Observe the 50th Anniversary of Powered Flight, Fifty Years of Aviation Progress (Washington, D. C., 1953), p. 20.

11 The work of the Morrow Board was commended by the Aircraft Industries Association twenty years later. In part the Association said that "the procurement program developed by those 1926 acts gave impetus to creation of engineering staffs by the manufacturers, and to planning of production methods most suited to the product. Expanded operations of commercial and military aviation during the ensuing years provided a testing and development facility that no laboratory could duplicate. Transoceanic pioneers' flights showed the world the fruits of America's efforts and demonstrated abroad the wisdom of our newly defined air policy. Ironically, too, as had often been the case, America's new leadership in aviation made a greater impression abroad than it did at home."
transcontinental line connecting with a series of feeder lines.

With the enactment of the Air Commerce Act of 1926 the Federal Government partially recognized the role it must play in the development of commercial aviation. Under provisions of the act the Secretary of Commerce and the Department of Commerce were charged with the duty of fostering and developing commercial aviation. It was designed, not so much to regulate as to stimulate American aviation. The major provisions of the act were designed

1. To encourage the establishment of airports, civil airways, and other navigational facilities.

2. To improve and expand meteorological services.

3. To aid in the general development of aviation.

4. To conduct aeronautical research.

5. To investigate accidents.

6. To institute a system of exchange of civil air information with other governments.

7. To set up ports of entry for foreign aerial commerce to facilitate the work of customs, immigration, agriculture, and other governmental agencies.

Regulative functions of the 1926 act included licensing, inspection, and operation of aircraft; marking of aircraft, and a system of licensing pilots and mechanics.

12 The key to Federal control of the airlines before the establishment of the Civil Aeronautics Authority in 1938 was the authority vested in the Postmaster-General for the granting of air mail contracts and the subsequent mail pay which was the life blood of the airlines.
In this manner minimum standards for airworthiness of men and machines were established and enforced. Unfortunately, various agencies of the government were charged with carrying out the provisions of the act, thus preventing a unified, centralized operation. The Department of Commerce was given the major duties of enforcement and administration with an Assistant Secretary for Aeronautics to administer the act. The Secretary of the Treasury was to provide for rules of entry, clearance, and customs regulations for aircraft engaged in foreign commerce. The Secretary of Labor was empowered to deal with immigration problems. The Weather Bureau of the United States Department of Agriculture was to furnish meteorological information. The Bureau of Standards in the Department of Commerce was to undertake research for the development of aerial navigation facilities. This loose arrangement of the Bureaus and Departments was reorganized as the Aeronautics Branch of the Department of Commerce in 1929, and in 1933 was redesignated as the Bureau of Air Commerce, Department of Commerce.

With the passing years the Bureau of Air Commerce was increasingly criticized for a variety of reasons. The lack of adequate airways, too much money spent on the development of small private aircraft, weak organization

\[13\] 44 Stat 568.
and decentralization of authority, and the disorganization of domestic aviation after the cancellation of air mail contracts in 1934 led to the demise of the Bureau and the establishment of the more unified and centralized agency in 1938.

Two decades after European international air lines began operations United States aviation interests turned their attention toward the international field. American carriers were rather late in arriving on the international scene for several reasons. Among them, the unique geographical extent of the United States gave the airlines a tremendous area in which to expand without having to cross into foreign territory. A national preoccupation during the thirties turned America's thoughts and energies inward rather than outward. Legislation was devoted to the advancement of domestic aviation, and little thought or attention was given to developing our foreign routes, although both their existence and their need of support were recognized. In pointing out this lag critics made much of Europe's early attention to international aviation. European experience was naturally international, because of the relative smallness of European nations. An airline restricted to national boundaries would not have had adequate area in which to develop an efficient and economical type of operation, even when given state support.
The policy of the United States toward its international carriers was formulated during the expansion of the newly-founded Pan American Airways in the Caribbean area. For the most part the policy was designed by the Postmaster-General and the Department of State, the former in an overt manner and the latter by lending tacit approval.

Some legislative support had been given to overseas airlines with the passage of the Foreign Air Mail Act of 1928. The Postmaster-General was given the authority to grant ten-year contracts to carry air mail to individuals or corporations engaged in air transportation. The payments were usually granted per airplane-mile; $2.00 per airplane-mile flown was the maximum rate allowed. Payments were made both on in-bound and out-bound flights. Payments made by foreign governments for the transportation of mail to the United States were credited to the account of the United States Post Office Department. The Postmaster-General was the sole authority in determining the rates to be paid and in deciding which operator was the lowest responsible bidder able to perform the service to the best interest of the United States. His decisions were subject only to review by Federal Court or by the President of the United States.\(^\text{14}\)

Armed with this authority Postmaster-General Walter Folger Brown in 1929 set out to develop American aviation so

\(^{14}\) 45 Stat 248.
that its routes would cover the nation, reach foreign markets, and eventually become self-sufficient. Brown felt that the subsidy should be withdrawn when passenger and other revenues increased, and he enforced his ideas by use of the mail contract. Postmaster-General Brown consistently favored airlines that had the strongest financial backing. In awarding contracts, extending routes, and using other economic pressures to force mergers, or in restricting certain airlines to particular areas, the Postmaster helped to force the least solvent companies out of business or into marginal areas of operation.

Little of the methods used by the Postmaster-General in awarding air mail contracts was made public until after the cancellation of all the domestic air mail contracts on February 19, 1934. Shortly thereafter, in a series of hearings — notably those before the Black Committee on "The Investigation of Ocean and Airmail Contracts," 1934, and in the later report of the Federal Aviation Committee, the policies of the Post Office Department and the Department of State were made public.

In a letter from the Postmaster-General to Eastern Air Transport, July 7, 1931, Brown stated his basic attitude toward awarding air mail contracts:

I have stated frankly to the air-mail operators that in the present state of the industry it did not seem the part of wisdom to invade each other's territory with competitive services, and that I did not believe that money paid for postal services should be used to set up services to injure competitors.
In pursuance of this policy I suggested the abandonment by the Pan American Company in the domestic field in the United States and as a result of that suggestion you are now negotiating with the Pan American Company for taking over their Atlantic City Service. Their field is the international service to Mexico, Central and South America, and the West Indies. Consistently with the policy outlined, it would seem improper for any of our domestic operators to use mail pay to invade the particular field of the Pan American Company.\textsuperscript{15}

In the above hearing the role of the State Department in the establishment of Pan American in Latin America was brought out by the testimony of Postmaster-General Brown. Pan American was not personally favored by the Postmaster to the detriment of any other air line, he claimed, it just happened to be the strongest contender and best met the Postmaster-General's requirements for a single company as the means to secure an immediate and strong position in Latin America.\textsuperscript{16} At his request, the State Department rendered diplomatic assistance to the air line in preference to any other company in the same area.\textsuperscript{17} The Post Office Department had requested the good offices of the Department of State upon more than one occasion to assure that Pan American would be the "chosen instrument" in Latin America, although the Postmaster did not feel that such requests

\textsuperscript{15} New York Times, February 15, 1934.

\textsuperscript{16} Henry Smith, Airways Abroad (Wisconsin, 1950), p. 21.

\textsuperscript{17} Matthew Josephson, Empire of the Air (New York, 1943), p. 56, citing Senate Committee to Investigate Ocean and Airmail Contracts, 73 Cong., 2 sess., pt. 3, Hearing of Postmaster-General Walter Brown.
were a matter of policy. In spite of this, he observed that the State Department appeared to believe that "the United States Government was in partnership with Pan American in a mail service to South America . . . or that the Government itself has an interest in Pan American." Thus, either through accident or design, the policy of having the United States represented by a "chosen instrument" was established early in the development of America's international aviation. Although Brown's actions and policies were subject to attack and were at times of questionable legality, he did by consistent action and policy firmly establish America's air network at home and abroad.

The awarding of air mail contracts to Pan American on an exclusive basis was viewed with a jaundiced eye by James A. Farley, the new Postmaster-General, who claimed that Pan American had been shown favoritism by the officials of the Post Office Department. He said that there had been no competitive bidding, not enough time for competitors to establish an operational airline, and that the maximum bid had always been accepted. These contracts were not cancelled, however, because of the feeling that it would be against the public interest to disrupt the only American air service to Latin America. This, in turn, would have

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19 Josephson, Empire of the Air, p. 56.
resulted in disruption of trade relations in South America, since Pan American was the only American bulwark against foreign airlines operating in South America.\(^{20}\)

President Roosevelt, in July, ordered an investigation of the foreign ocean and air mail contracts, giving the holders of such contracts until October 1, 1934, to show cause why the contracts should not be modified or cancelled.\(^{21}\) As a result of these investigations the Post Office Department and the contractors reached new agreement in which there was a revision of mileage, improved scheduling, and a reduction of the pay rates.\(^{22}\) It must be remembered that during this entire period Pan American was building its Pacific air routes which depended, in a large part, on mail pay. This development was seriously jeopardized by the air mail investigations.

Later evidence suggested that the investigations were, at least in part, politically motivated, and events since have exonerated many of the scapegoats. The immediate outcome was chaos for the domestic airlines, but in the long run, the whole episode led indirectly to the passage of the Civil Aeronautics Act, which gave the United States its


\(^{21}\) Ibid., July 18, 1934.

first comprehensive code to guide, strengthen, and police American aeronautical activities.

During this time (1934-1938) policy concerning the role of the government in America's overseas lines was crystalized. The need for the formation of a definite plan was voiced early by the Federal Aviation Commission's report to Congress on January 31, 1935. The government's attitude towards mail payments on foreign routes remained basically the same. The Commission felt that:

There is at the present time a legal and financial structure of foreign air transport which includes a number of air-mail contracts that have some five years yet to run. Though we are proposing a change in the form of administration of new foreign routes and in the financial relationship of their operators with the government for the future, we accept the present contracts not only as legally binding but as a legal foundation for a highly important and continuously functioning service. We should consider it most unfortunate if they were to undergo any sudden disturbance. We therefore propose that they be left undisturbed, and that existing service continue under the direction of the Post Office Department and be compensated by the Post Office appropriation unless and until a new commission shall have been established and new arrangements without term of expiration arrived at by joint agreement between present operators and the commission.

With reference to the establishment and maintenance of United States foreign routes the Committee observed that:

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23 This Commission had been directed to make a broad study of American aviation, including the problems of national defense and the extension of United States services.

This is a development in which we recommend that the United States should not be laggard. America should take its share. In the Pacific there is a particular reason for doing so in that the most essential of all intermediate stopping-places, the islands of the Hawaiian group, are under the American flag. We recommend the extension to American foreign air transport, both in the areas where it now exists and in others where its creation seems likely to become possible in the near future, of that policy of adequate governmental aid for first-class services, adequately serving American commerce and worthy of American prestige, which we have recommended in connection with the domestic air lines. The matter seems to us even more urgent in the foreign field than within the continental United States.25

In order to protect existing United States foreign airlines and the Government's investment therein, the Committee voiced the opinion that the status-quo of Pan American should be retained and further assurance be given them that its relationship with the government would remain as it was. As stated by the Commission:

If American airlines are to compete with lines under foreign direction it would be an obvious absurdity to divide the American strength by competition among a multiplicity of American-flag enterprises.

The report continued:

No government can engage in great engineering undertakings outside its own borders. It is impossible for the Department of Commerce to set up lights and radio stations in Central America or the Orient... It has been necessary for the air lines to build their own landing fields, provide their own meteorological services and others... It is impossible that all that should be done, involving as it does a very heavy capital outlay, without some definite assurance of a continuance of governmental aid over a considerable period.

25 Ibid., p. 83.
... it would be better to give the foreign lines a permanent assurance of reasonable notice of any change in their relations to the government which might fundamentally affect their ability to continue operation. They might then feel assured of having the substantial period provided by the notice to dispose of their equipment or otherwise to get their capital out if continued operation appeared impossible, and they would be justified in making an investment that they could not reasonably venture without some such guarantee [that] these services ... are making a gradual progress towards a reduction of dependence upon governmental help, and through the present system could be maintained at a gradually diminishing net expense, we believe that the present total will need to be increased if American-operated routes are to be extended as we are convinced that they should be.26

As a result of this report several governmental agencies began studies of America's airlines operating outside the continental limits of the United States in order to determine the part government should play in the regulation of such lines. For example, in 1935 the Bureau of Air Commerce organized an inter-departmental Committee to study civil international aviation. The study was made with a view to developing regulations similar to those for domestic aviation, but taking into account the special problems inherent in foreign and transoceanic flight. The Committee discussed the establishment of international airlines with the representatives of other nations in order to determine the possibility of concessions on a reciprocal basis. The Committee favored bi-lateral treaties with complete reciprocity and the inclusion of the principle of

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26 Ibid., pp. 89-90.
"most favored nation" treatment. It denied any intention of advocating a chosen instrument, but rather favored open competition in foreign air transport. Nevertheless, throughout the thirties and forties the Post Office Department continued to advocate the use of mail pay as a means of encouraging and developing United States overseas air services.

During the House Committee hearings on the revision of the Merchant Marine Act in 1937 some quarters advocated that transoceanic aviation should be placed under the jurisdiction of the Maritime Commission. Parallels were drawn between the similarity of operations and problems of the surface and air carriers, but in the end this plan was discarded. President Roosevelt in 1934 had advocated a semi-permanent Air Commerce Commission with broad controls, including the setting of rates, which had been left, heretofore, to the discretion of the carriers. In addition, all transportation, whether on land, sea, or in the air should be placed under the jurisdiction of a superboard or commission.

Out of this welter of differing opinions, several bills were introduced into Congress concerning the regulation of commerce, Twenty-fifth Annual Report of the Secretary of Commerce, 1937 (Washington, D. C., 1937), pp. xxii-xxiii.


Time, February 30, 1934.
of air transport. Senator Pat McCarran, Democrat, Nevada, introduced a bill to place the airlines under a non-political section of the Interstate Commerce Commission. At the same time Representative Clarence Lea, Democrat, California, introduced a bill in the House calling for an independent government Bureau of Aviation. In committee these bills were united and became known as the Lea-McCarran Bill which advocated control by the Interstate Commerce Commission and regulations of such a nature as to preserve, essentially, the status-quo of American international aviation.  

In opposition, the Bland-Copeland Bill, introduced in the summer of 1937, called for the divorcing of domestic and overseas aviation and placed the latter under the Maritime Commission. Chairman Joseph P. Kennedy of the Maritime Commission visualized overseas aviation as an auxiliary of the Merchant Marine, whereby ships would carry

30 Again in 1945 Senator McCarran introduced the McCarran "All American Flag Line Bill" which in general sought to preserve the "chosen instrument" principle as opposed to the domestic airlines' desire for foreign routes. The Bill, if passed, would have tended to preserve the status-quo that existed prior to World War II. On March 27, 1945, J. T. Trippe, President of Pan American World Airways, testified before the Sub-committee on Aviation of the Committee on Commerce, United States Senate, in favor of the bill. Pan American World Airways, Testimony of Juan T. Trippe, President, Pan American World Airways. At hearing on the McCarran "All-American Flag Line" Bill held before the Sub-committee on Aviation of the Committee on Commerce, United States Senate, March 27, 1945.
cargo, and aircraft would be devoted to carrying of passengers. Under this scheme of things, ships and aircraft were to be built by the government, and turned over to a unified surface-air carrier.

The bill that finally passed, the McCarran Air Bill, was a compromise between the idea of complete governmental control and that of a non-political government board. Senator McCarran had advocated that airlines should be out of reach of the White House, whereas the government took the attitude that aviation was so closely related to national defense that it should be readily accessible to the Departments of the Army, Navy, and State, that they might observe its activities on an official basis. The Bill passed Congress on May 16, 1938, was approved on June 23 by the President, and became effective August 22. It preserved the status-quo of American aviation, yet increased the powers of government over the operations of United States commercial aviation.

The Civil Aeronautics Act of 1938 established a firm

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31 Time, December 27, 1937. It was reported that the super-plane on which Pan American requested bids for on December 9, 1937, was planned in order to show that airlines did not have to be subsidized in this manner and could afford to build their own aircraft. Their idea was to defeat this bill. See below, pp. 147-148.

32 Time, July 18, 1938.

33 For a thorough discussion of the Act, see Charles A. Rhyne, The Civil Aeronautics Act Annotated (Washington, D.C., 1939).
control over all American aviation for the first time, including (1) the control of mail subsidies, (2) the authority to fix mail pay rates, (3) the determination of mail routes, upon the request and recommendation of the Post Office Department, (4) the designation of carriers and granting of permission to operate, and (5) the determination of maximum freight and passenger tariffs. 34

The air policy of the United States, as stated in Section Two of the act, considered the following points in the light of the public interest and in accordance with public convenience and necessity:

(a) The encouragement and development of an air transportation system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, of the Postal Service, and of the National defense;

(b) The regulation of air transportation in such a manner as to recognize and preserve the inherent advantages of, assure the highest degree of safety in, and foster sound economic conditions in, such transportation, and to improve the relations between, and coordinate transportation by, air carriers;

(c) The promotion of adequate, economical, and efficient service by air carriers at reasonable charges, without unjust discriminations, undue preferences or advantages, or unfair or destructive competitive practices;

(d) Competition to the extent necessary to assure the sound development of an air transportation system properly adapted to the needs of the foreign, and domestic commerce of the United States, of the Postal Service and of the national defense;

34 52 Stat 973ff.
(e) The regulation of air commerce in such manner as to best promote its development and safety; and

(f) The encouragement and development of civil aeronautics.35

In a hearing before the Civil Aeronautics Authority, the heart of government policy towards aviation, which rather closely paralleled that of the Federal Aviation Commission's report of 1935, was thus stated: "We interpret the essential purpose of the Civil Aeronautics Act to be the development of air transportation on sound economic lines, with the necessary implication that positive incentive must be offered to air carriers to seek an enlargement of their commercial revenues and a reduction of their expenses . . . towards reduced dependence on Government support. Incentive is naturally to be given in the form of an expectation of increased net income as progress is made in the desired direction."36 In the same hearing, the Authority's spokesman stated its principles for aid to the airlines. These had been arrived at in realization that Congress, when adopting the Act, was aware of the financial conditions of the airlines and knew that "in most instances, the airlines would be unable to survive without revenues from the transportation of mail sufficiently large to make up the deficiency in revenues from passenger and express sources.

35 52 Stat 980.

36 Civil Aeronautics Authority, Decisions of the Civil Aeronautics Authority (Washington, D. C., 1941), I, 254. Hereafter cited as CAA-I.
Yet the encouragement and development of an air transportation system adapted to the present and future needs of the foreign and domestic commerce of the United States and of the national defense, as well as of the Postal Service, was regarded as an essential national objective. The Authority also pointed out that when considering rates it would weigh such factors as, "the needs of each such air carrier for compensation for the transportation of mail sufficient... together with all other revenue of the air carrier, to enable such air carrier under honest, economical and efficient management, to maintain and continue the development of air transportation to the extent and of the character and quality required for the commerce of the United States, the Postal Service, and the national defense." \(^{37}\)

It was the reflection of this policy that led the Authority to increase the mail pay rates for Pan American's Pacific operation in 1939. The Authority granted the increase because of the volume of commerce that crosses the Pacific "and the importance of this air transportation to such commerce. We have also considered the value of trans-Pacific air transportation service to the Postal Service and the national defense. The rate of compensation fixed herein reflect our consideration of these matters." \(^{38}\) Again, when

\(^{37}\) Ibid., p. 253.

\(^{38}\) Ibid., p. 408.
Pan American petitioned the Authority to reopen the South Pacific route permission was granted not so much for reasons of public convenience and necessity as for its military and political value. In February 1940, several months before the route was approved, the Civil Aeronautics examiners recommended that the certificate be granted as "valuable to the national defense." Approval was delayed by the examiners, who seriously questioned practicality of the route due to its high cost of operation and the small volume of mail, cargo, and passenger traffic inherent in this area. However, upon strong urging by the Navy and Post Office Departments, the Authority was prevailed upon to grant Pan American the authority to commence operations.

The Navy's interest in these overseas routes was primarily in the air bases involved. In many areas Pan American had bases that could be maintained only through continuous use by that company, hence the Navy urged the approval of the South Pacific route so that those bases could be retained in an active status.

The requirements of Pacific aviation thus were completely shifted from an emphasis on a commercial international air policy to one more directly concerned

40 PA-2, p. 28.
41 Honolulu Advertiser, August 24, 1939.
with national defense and other military objectives. Many of the Pacific operations were thus conducted primarily for reasons involving national defense rather than for the commercial needs of the public. 42 In the words of one writer on air line policy, "Because of the combination of strict governmental control and public aid, air transport lines cannot be considered as purely commercial enterprises. They should rather be considered as 'chosen instruments' of national policies; in return for performing certain tasks of national importance as directed by the government, air transport enterprises enjoy a state guarantee of continuous existence and, where private capital is invested, a moderate, but assured return on the investment." 43 This position was

42 An example of this was the delay of the Clipper by Ambassador Grew in November 1941. "Kase [an interpreter] came at 12:10 with a message from the Foreign Minister that he wanted to send Kurusu to Washington to help Admiral Nomura with the conversations but that the American clipper was scheduled to leave Hong Kong tomorrow morning and that unless he could go on that plane it would be too late to wait a fortnight for the next one because, 'for technical reasons,' he must be in Washington by the 13th, before the Diet meeting on the 15th, of course. If the clipper could not be held up for two days to permit Kurusu to fly to Hong Kong, the only alternative would be for Kurusu to fly to Saipan and take a destroyer to Guam, to catch the plane there. I knew very well that our Government would not welcome the latter plan. "Dooman [Embassy Counselor] telephoned to Max Hamilton in Washington, and the latter must have done some pretty snappy work because within a few hours Hamilton telephoned back that it was all arranged for the clipper to delay its departure from Hong Kong from the 5th till the 7th." Grew, Turbulent Era, II, 471.

clearly stated by a House Committee in 1945 which recognized the need for transoceanic aviation despite the lack of economic demand for such services, as the operations west and south of Honolulu proved prior to World War II. The report said in part:

Provisions for national defense and the preservation of a leading position for the United States in world air commerce will be a factor in shaping public policies with respect to the further encouragement of air transport. If, for the security and welfare of the nation, it should be desirable to augment aviation facilities beyond the effective economic demand for them, these matters should be dealt with separately and be recognized as a cost attaching them to the military budget. All expenditures of public funds for purposes of national defense should, as a matter of sound national bookkeeping, be specifically labeled as such, and, therefore, the pursuit of such objectives through the medium of air-mail payments is not appropriate.\footnote{House Documents, 79 Cong., 1 sess., no. 159, pp. 82-83.}

With the emphasis shifting to military rather than commercial needs and armed with Congressional authorization under the Civil Aeronautics Act, federal aids to navigation, airport construction and other projects were pushed in the Pacific area. However, only a limited amount of work was completed before it was interrupted by the Japanese attack upon the United States.

In September 1941 the following projects were under way in the Pacific: radio stations on Palmyra and Johnston Islands were near completion; engineering surveys had been prepared for stations at Howland and Canton Islands and for
radio range facilities at Midway and Wake. Equipment for these projects was assembled in Honolulu, but transportation difficulties delayed the work until after the war had begun. The funds for Howland and Canton facilities were included in Defense appropriations; funds for the Wake and Midway radio ranges were transferred to the Civil Aeronautics Authority from the Navy Department. At the same time an extensive project to dredge a seaplane base at Keehi Lagoon, Oahu, was started by the United States Engineers, but it was scarcely begun when the Japanese struck. On December 7, 1941, the only air navigation facilities operated by the Civil Aeronautics Authority in the Pacific were two simultaneous range stations and two broadcast stations, all of which were located in Hawaii.

Prior to the advent of World War II there were numerous international aerial organizations established to bring some sort of control in the conduct of the international carriers. These bodies dealt with many of the aspects of civil aviation from sanitation and quarantine to radio communications. By the usual rejection of participation in such bodies in the two decades following World War I the United States also avoided involvement in aerial "foreign entanglement." During this time international air transport

45 Civil Aeronautics Journal, September 1, 1942.
46 Ibid., January 15, 1942.
relationships were based upon five fundamental principles: (1) That each state assumed and maintained full and complete sovereign rights over the air space above its territory, including its territorial water. The air space over the high seas was considered to be free. (2) Most states adhered to one of the two major international air conventions affecting air transport, the Paris Convention (1919) and the Havana Convention (1928). (3) These conventions undertook to give certain general privileges to the aircraft of the participating states, and the observation of unified rules appertaining to traffic matters and the licensing of pilots and aircraft. (4) These conventions did not create any rights in the operation of aircraft between nations. (5) International air services were established either as a result of bilateral agreements between states or by interested airlines who secured the concessions themselves to operate to or within such states on a unilateral basis.

Prior to 1945, therefore, American international airlines operated through unilateral franchises secured, for the most part, by direct negotiation between the airlines and the nations concerned. Pan American had made all of its own operating arrangements in the Pacific, albeit not without a very friendly United States Government in the background. In the Atlantic the United States did step in and handle agreements with the United Kingdom and France. None of the Pan American-conducted agreements provided for the issuance
of reciprocal rights on the part of the United States. However, they did leave the President free to do so if he decided such a course would be in the national interest.

Before December 7, 1941, the United States had entered into a series of Air Navigation Agreements with several foreign states governing the reciprocal operation of each nation's aircraft in the other nation's territory, even though these agreements did not authorize the aircraft of one nation to fly over the domain of the other. Opposed to the above were Air Transport Service agreements which authorized each party to conduct air operations to or in the respective nation's territory. However, none of the above agreements affected Pan American's Pacific service.

The only permanent international aeronautical body on which the United States was represented was the International Technical Committee of Aerial Legal Experts (Comité International Technique d'Experts Juridiques Aériens -- CITEJA), which was recognized by the Senate in 1934. This committee dealt with the form and legal effect of transportation documents (passenger tickets, baggage checks, and airway bills), and with provisions covering the liability of the carrier towards persons and property damaged. The decisions rendered by them were not binding upon the member states.

47 Department of State, Aspects of United States Participation in International Civil Aviation, Publication 3209 /Washington, D. C., n.d./, p. 34.
There were numerous other international bodies that dealt directly or indirectly with international aeronautical matters, on which the United States had been represented by observers or from which it had received reports of deliberations. In no case were any of their conventions, treaties, or agreements considered binding upon the United States. Among the organizations were the Air Transport Commission of the International Chamber of Commerce, the International Lighting Commission, the International Air Traffic Association, the International Telecommunications Conferences, the Universal Postal Union, the International Office of Public Hygiene.

Pan American's advance across the Pacific Ocean created few ripples in the diplomatic millpond. There were some discussions between Great Britain and the United States over a relatively minor incident concerning the sovereignty of the Line Islands and the Phoenix Group. Conversations

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48 After World War II "Cognizant that a postwar international organization was needed that not only would set up air-navigation standards and practices for the whole world but also would deal with the economic problems of international air transport, the United States took the lead by calling an international conference on Civil aviation." Ibid., p. 1. The convention, ratified on April 4, 1947, established the International Civil Aviation Organization, supplanted the two earlier "international conventions," the Paris Convention (1919) and the Havana Convention (1928).

49 See below, pp. 101-117.
with the Soviet Union concerning the possible use of Soviet territory proceeded smoothly, although they accomplished nothing. However, the Japanese Empire, throughout the expansion of Pan American's Pacific network, expressed concern over the relationship between Pan American and the United States Government. This concern, however, did not manifest itself in full scale discussions between the two governments. In addition, the growing antagonism between the Far East policies of Japan and those of the United States prevented extension of American airlines into Japan, which was the leading nation in the Orient in aviation development.

Official and unofficial opposition of Japan toward American aviation apparently began in 1931 with the Lindbergh flight from Alaska to China, via the Kurile Islands and Japan, and continued to grow until no rapprochement between the two nations seemed possible. In 1933, when Pan American purchased 45% of the stock of the China National Aviation Corporation from the Curtiss-Wright Corporation, the Japanese Government expressed official opposition to that transaction. Disapproval was again voiced concerning the stock transfer in the famous statement made by Eiji Amau, the Chief of the Bureau of Information and Intelligence of the Japanese Foreign Office, on April 17, 1934. He asserted that any joint operations undertaken by foreign powers with China "would tend to alienate the friendly relations between Japan and China and the other countries and to disturb peace and order in East Asia. Japan will oppose such projects." In 1935,

50 Department of State, Papers Relating to the Foreign Relations of the United States and Japan, 1931-1941 (Washington, D. C., 1943), I, 253.

51 Ibid., p. 225.
when Pan American received permission to build its bases in the Central Pacific, Japanese naval authorities were quick to voice their disapproval, claiming that the United States had no vital interests in the Far East and that the distinction between commercial and military or naval use of these islands was not clear. The Japanese Foreign Office, when queried about the matter, could not say whether any formal protests would be made. As it turned out, American naval officials were, in fact, as anxious to have these bases built as the Japanese were fearful of having them built.

In the leading newspapers of pre-war Japan there often appeared such remarks as this: "United States transpacific aviation under the pretext of civil aviation... bears a great strategic significance, exposing to the whole world their aggressive naval plans against the Far East." As reported by Joseph C. Grew the attempt to establish the Great Circle route was unfavorably commented on by an Admiral Suetsugu in the

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53 Nonetheless, when hostilities between the United States and Japan broke out the Central Pacific seaplane bases, with the exception of Midway, played little or no part in American military efforts against the Japanese. The South Pacific bases were of some use as transport bases, but the concept of war had changed from 1935 so that by 1941 seaplanes were of little use as combat aircraft.

54 *Honolulu Advertiser*, April 26, 1935.
The affair over the sovereignty of Canton and Enderbury Islands between the United States and Great Britain drew this comment from Tokyo, "Authoritative quarters said they were unable to reconcile occupation of the islands with the United States' insistence that she was only concerned with defense in the Pacific. Britain's apparent 'benevolent

"They [the Americans] are now bringing airplanes to Canton in large numbers; they are reinforcing the airlines at Shanghai, Hankow, etc. At the present moment they are bringing more to Canton and then to Amoy and Foochow, constructed air bases along the coast up to Shanghai. Now in the north we remember that Americans several times attempted to cross the Pacific via Alaska and repeatedly failed. Viewed from our military point of view, their frustrated attempts were simply reconnoitering. They were purposeful, but the Japanese, being a race of good-natured men, showed unstinted kindness to them, especially the country people were kindly disposed to them, acting as if they were their own sons who were trying to fly across the big sea.

A certain lieutenant made a strange flight and returned. Then what happened, do you think? The Lindberghs came, and they delayed in the Kurile Islands for a week, saying it was bad weather yesterday, and again today. They flew and returned. It may be imagination of course, but it is equally possible that they reconnoitered in that part of the country. What are the Americans doing now? They are continuing since then surveying corps, telegraph corps, and aviation corps, etc. What does all this point to? Then they have resumed diplomatic relations with Soviet Russia. Of course we can see economic motives in this, but it is possible to say that they may have had in view the possibility of surrounding Japan in all directions with their warlike preparations. Soviet Russia is concentrating efficient bombing planes and making war preparations in the Far East. . . We must expect a large air force will be brought by the large fleet across the Pacific. . ." Turbulent Era, II, 111.
unconcern' toward American appropriation of nominally British territory has been noted with evident anxiety."  

Even the French, after the German occupation began, remarked about America's Pacific aviation. The Paris newspaper, *Nouveaus Temps*, in November 1940, commented on the "shallow trick" of Pan American in seeking to extend its route into Singapore for commercial reasons. It went on to say that Japanese diplomacy was all too well aware of the dangers of American occupancy of key points in the Far East.  

These comments, and others, represented attitudes which helped prevent the development of the island bases across the Pacific at a rate that could have aided and facilitated the operations of Pan American's Pacific service and national defense. These attitudes also denied any real commercial basis upon which Pan American could build its service. Naval construction, especially of port facilities, was delayed at Midway, Wake, Guam, and Canton Islands for fear of offending the Japanese. When it became readily apparent that no amount of placation would satisfy the sensitive government of Japan, construction of facilities began. In line with the policy of too little and too late, work on the American advanced bases had barely started when Japan struck.

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57 *Ibid.*, November 22, 1940.
CHAPTER III

SPANNING THE PACIFIC

It is impossible to tell when men's thoughts first turned seriously toward transoceanic flying, although in 1910, a famous British flyer predicted that the Atlantic would be crossed in about eighteen hours before twenty years had passed. It is not generally realized that prior to the establishment of the San Francisco to Manila scheduled air service in 1936 by Pan American, there were no true transoceanic routes in operation. The Atlantic had been crossed many times, but never by commercial aircraft on a scheduled basis. The longest over-water flights anywhere were the mail flights conducted by the French from Dakar, French West Africa, to Natal in Brazil, a distance of 1,864 miles. The longest commercial passenger flights were those flown by Pan American over the Caribbean Sea from Kingston, Jamaica, to Barranquilla, Colombia, a distance of 600 miles. It was on the Caribbean routes and other South American runs that Pan American developed its equipment (direction-finding and other navigational apparatus), and trained its crews for the extended over-water operations that were to be characteristic of the Pacific flight pattern.  

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1 Harold B. Miller, *Navy Wings*, p. 160.

2 PA-2, pp. 1-2.
Prior to World War II scheduled commercial oceanic flights over the Pacific were not conducted by fliers of any nation except the United States. While the British, Dutch, and French had been conducting operations fringing the Pacific Basin, none of them were able to span the ocean, due to limitations of equipment, coupled with the refusal of the United States to grant permission to the British and Dutch airline companies to use the Hawaiian Islands as a stop-over point. 3

The Dutch were the first international carrier to reach the Pacific, with the establishment of the Amsterdam-Batavia line in 1930. The French followed closely linking France with Indo-China in 1931. By 1933 Britain had established connections between Singapore and London, and in 1934 reached Australia. Japan maintained a route linking her Micronesian island possessions and connected with Dilli, the capital of Portuguese Timor, late in 1941. 4 All these flights were characterized for the most part by short over-water trips from island to island or from continent to island so they cannot be considered as transoceanic flying in the true sense.

Before World War II United States international aviation was conducted solely by Pan American Airways

Corporation, hence the story of the Pacific chiefly concerns Pan American and its affiliates. There had, however, been considerable thought devoted to this subject by Americans before regular service was finally established. As early as 1927, as a result of Lindbergh's flight, an editorial in *The Independent* mentioned the possibilities of transpacific aviation and called for the use of the Central Pacific islands route to the Orient.\(^5\) At that time the dirigible was considered a practical carrier, and such craft were projected for Pacific flights. In 1928, the Goodyear Zeppelin Company planned two ships for a California-Hawaii run,\(^6\) and later the International Zeppelin Transport Corporation and an affiliate, Pacific Zeppelin Transport, Limited, formulated plans for a route from the Pacific Coast to the Philippine Islands to connect with other airlines on the Asiatic continent, and thereby to complete a projected round-the-world line. However, none of these dreams were realized.\(^7\) In 1931, the *New York Times* urged that bases for seaplanes be built on the islands of Midway, Wake, and Guam. Again, nothing was accomplished before 1934-1935.\(^8\)

Early in 1931 a general plan for oceanic flying was proposed at a meeting of Pan American executives, including

\(^{5}\) *XVII* (June 4, 1927), 577.

\(^{6}\) *Time*, May 20, 1929.

\(^{7}\) *New York Times*, November 12, 1933.

\(^{8}\) *August 2, 1931.*
Juan T. Trippe, President, Andre Priester, Engineer, and Charles A. Lindbergh, Technical Advisor. During the ensuing years came aircraft orders, route surveys, and negotiations for the acquisition of bases and air routes. Scientific expeditions were sent out to chart weather and to secure other data necessary for safe aircraft operation. These made possible the flight of the Pan American Clipper on April 16-17, 1935, from California to Hawaii.

Although not a direct part of the history of aviation in the Pacific, the efforts of Pan American in the Atlantic affect this story. From 1930 through 1934 efforts were being made in both the North Pacific and the North Atlantic to develop transoceanic routes. During this early period, before the 1931 meeting, plans were made by Pan American and by British Imperial Airlines to cross the Atlantic via Bermuda and the Azores. A series of expeditions was sent to the North Atlantic to gather meteorological, radio, communication, and landing field data; also there were the Pan American East Greenland Expedition of 1932 and the Lindbergh European flight of 1933. Since weather conditions in the North Pacific and North Atlantic were considered to be generally the same, separate expeditions on a similar

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scale were not pushed in the Pacific area. Concessions granted to another United States airline, Trans-American, were purchased by Pan American in 1932 for landing rights in Iceland. Other efforts to secure landing rights and concessions, however, were stalled in the Atlantic until 1939. At the same time, since Pan American's activities in the Pacific were more successful, it was decided to open this more extensive but less profitable route and put to use the transoceanic equipment that was available in 1934.

Probably the first overt approach to the Pacific route was the consideration of the Great-Circle route to the Orient, via Alaska and the Kurile Islands. In July, 1931, Colonel Lindbergh, Pan American's technical director, made a survey flight for the company over a course approximating the Great-Circle route via Alaska, Siberia, the Kurile Islands, Japan, and China. As a result of this flight he submitted reports that were generally favorable to the establishment of a route, despite uncertain weather and lack of communication facilities. Although Lindbergh publicly denied that there was a direct commercial interest in his

flight and maintained that the trip was purely a personal matter, he did admit there were commercial possibilities in such a route.  

As a result of these reports Pan American instituted several moves to further its own interests along this route. The company thoroughly studied conditions in this area, especially communications, weather, and other operational problems mentioned in the Lindbergh report, and determined that the difficulties could be overcome. Among its subsequent actions were: the Arctic Expeditions in the Atlantic; the acquisition of local airlines in Alaska so as to gain a foothold in that sector; an attempt to secure from the Union of Soviet Socialist Republics the necessary rights and co-operation to use Siberian bases; and the acquisition of bases on the Chinese mainland. In addition, bids were solicited and received for seaplanes capable of carrying commercial loads over the Atlantic and Pacific oceans.

Before the entry of Pan American on the Alaskan scene, aviation there was in a rather chaotic state. The total population of the Territory in 1930 was 60,000, hardly enough to maintain an efficient, economically feasible air system. There were few individual operators in the

15 PA-113, p. 1ff.
major Alaskan cities. The principal air base was at Fairbanks. Service was maintained by a heterogeneous collection of aircraft, which competed with dog teams for Star Route mail contracts, while other flying consisted mainly of charter services.  

To facilitate its Alaskan operation, Pan American, early in 1932, established the Pacific Alaska Airways, Incorporated, owned wholly by the Pan American Airways Corporation. In the fall of 1932 Pacific Alaska Airways, Incorporated, purchased the entire facilities of Pacific International Airways and Alaskan Airways, Incorporated, acquiring their personnel, equipment, and the Star Route contracts. At this time the two lines had accumulated a debt of $100,000 in operating losses.  

The motives for the purchase of these Alaskan airline were threefold: to learn arctic flying and operations; to "reconstitute" local Alaskan operations; and to take over one segment of the Great-Circle route. Bluntly stated, the reason for the purchase was to stall off any rival airlines in that area of the Great-Circle route.  

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18 PA-113, pp. 3-4.  
19 Ibid., p. 5.  
20 Henry Smith, Airways Abroad, p. 31.
As the acquisition and consolidation of the feeder lines in Alaska went forward, two other steps were being taken simultaneously to fill in the gaps on the Great-Circle route. Because of the limited range of transport aircraft of the period, it was apparent that bases or stations along the Pacific coast of Russia would be necessary. Unfortunately, the attempts in 1931 to secure concessions or co-operation from Russia were unsuccessful because the United States had not yet extended formal recognition to Russia, which made it "not opportune to discuss the matter."\(^2\)

Despite the refusal of the Soviets to permit Pan American to use bases in Siberia, plans went ahead for the acquisition of routes and bases on the Asiatic mainland, and search continued for an alternate route. Early in 1932 Pan American utilized the services of Doctor Vilhjalmur Stefansson, a world-renowned expert on arctic conditions, as advisor on aviation problems peculiar to the Arctic. He made a survey of the Great-Circle route and urged the feasibility of forming an "Intercontinental Trans-Bering Airways" company.\(^22\)

Another phase of this program was the attempt to acquire local feeder routes in China and the securing of

\(^2\) PA-113, p. 2.

\(^22\) Ibid., p. 3.
a base on the China Sea. The first part of this program came to fruition in 1933, while the latter, securing an international base on the Chinese mainland, was not realized until 1936, following protracted negotiations.

By virtue of the Nine Power Treaty, signed in 1922, the signatories, among whom were Great Britain, China, Japan, and the United States, had agreed to the principle of "the most favored nation" by which rights granted to one of the signatories should accrue to all. The Chinese Government, fearing that to grant concessions to any of the signatories would automatically accord Japan the same right (thus giving Japan a further commercial aviation foothold in China, which the Chinese did not desire), declined to make any overseas aviation concessions. In order to circumvent the Treaty, Pan American determined to gain an interest in an air line already operating within China.

In 1933, China was serviced by two aviation companies, which were partially controlled by the Chinese Government and partially by foreign concerns. The first was Eurasia, in which the German state-dominated Lufthansa owned a part interest. The second was the China National Aviation Corporation (CNAC), with 45% of the shares held by an American company and 55% owned by the Chinese Government.

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American aviation interests had arrived in China in 1929 when 45% of the stock of CNAC was purchased by North American Aviation Company, a subsidiary of the Curtiss-Wright Corporation. Unfortunately, the political difficulties that beset China during this period prevented the airline from developing financially, and it lost approximately $300,000 a year. The chief cause of the trouble was friction between the Chinese administration of the company and the American pilots. Also, the company appeared to be more of an outlet for American material than an airline for service.

In 1933, the American interests in CNAC were owned by China Airways Federal, Incorporated, another one of a series of holding companies of the Curtiss-Wright Corporation. Nevertheless, early in January 1933 Harold H. Bixby, a Pan American executive, was sent into China "to represent the newly acquired interests" and on April 1, 1933, Pan American, by a stock transfer, assumed control of CNAC. The reason for the purchase of CNAC at the time was to gain a foothold on the China coast as a link in the Great-Circle route. It was not, at that time, intended to be an anchor for the Central Pacific route, as maintained by Pan American at a later date.

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25 PA-113, p. 3.
26 CAA-I, pp. 401-402.
The terminus most desired for Pan American’s trans-pacific service was Shanghai. Being denied direct overseas access to that port city, Pan American would find the coastal route between Canton and Shanghai held by CNAC to be of immense value. It was hoped that some overseas connection could be made at Canton, for close by lay the British Crown Colony of Hong Kong and the Portuguese Colony of Macao. In addition, weather data and flight experience within and along the China coast could serve a transpacific line well. 27

Because of the Nine Power Pact, the only possible place where the airline could land on the Chinese mainland was the Portuguese Colony of Macao, as the British refused to enter into a unilateral agreement with Pan American for the use of Hong Kong. As early as 1930 negotiations were being made for concessions at Macao by Richard C. Long for Pan American. 28 Talks continued through 1933 and were finally concluded in 1937, when the concession was granted.

After the acquisition of CNAC in 1933, efforts were also made to extend CNAC’s routes into the Philippines. Application was made to the Philippine Government for a franchise to operate regular scheduled flights to Manila and Hong Kong. 29 Route surveys were made from Hong Kong to

27 PA-2, p. 8.
Manila and into the southern Philippine Islands in April 1933. Unfortunately, these efforts came to naught as a result of British policy, and it was not until 1937 that Manila and the Asiatic mainland had regular airline connections maintained by Pan American's transpacific flights.

In September 1933, shortly after surveys in the Philippines and on the China coast had been completed, Colonel Lindbergh began a survey flight for Pan American that was to carry him to Moscow, the capital of Russia. Again he stated that he and his wife were merely "private citizens on a purely personal trip for their own interests." While at Moscow he was hosted by B. Anvett, Vice-chairman of Civic Aviation Department of the Soviet Union; also present was Senator McAdoo of California, who later, in Manila in connection with Philippine independence, offered encouragement for a transpacific route. Although it cannot be definitely proved, this visit may well have paved the way for the discussions between Pan American and the Russians in the spring of 1934. These early discussions proved favorable, and plans were made for a trip through Alaska and into Siberia in September 1934 to test the

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30 CAA-I, p. 403.
32 Ibid.
practicability of such a route.

During 1933 the United States Government also had been conducting talks with the Soviet Union concerning official recognition between the two governments. On November 16, 1933, the United States formally recognized the Union of Soviet Socialist Republics. One month later Pan American was approached by Soviet technicians for permission to examine certain types of Pan American's technical equipment.

In answer, Pan American referred to the abortive discussion of 1931. In February, 1934, the Russians replied that they were ready to open general discussions, and further cordial relations were established by Pan American's assistance in March, 1934, in the rescue of the Chelyuskin Expedition. Discussions were carried on during the Spring of 1934, between representatives of Pan American, including Dr. Stefansson, and representatives of AMTORG on behalf of the Russian Government, and based thereon, Pan American submitted definite proposals for surveying a commercial airway between Alaska and Vladivostok and/or between Alaska and Peiping, and if technical surveys were favorable, for the establishment of an airway along the route. These proposals were transmitted by AMTORG to the Soviet officials in Moscow.

33 Ibid., September 3, 1934.

34 Lindbergh's aircraft on his 1933 flying visit to Moscow was equipped with Pan American-developed radio equipment.

35 PA-113, p. 7. The Chelyuskin was a Russian freighter that attempted to force passage from Arkangel to Vladivostok via the Arctic Sea. Unfortunately, the ship was sunk on February 13, 1934, casting 101 people adrift on the Arctic Sea ice pack. Pan American sold the Russian Government two light aircraft to aid in the rescue operations and offered its facilities at Nome to aid the rescue parties.
Due to the absence of official relations between the two nations, very few flights had been made between Siberia and Alaska before 1933, and it was considered to be a rather hazardous expedition. Some of the early pioneers of Alaskan aviation, including Ben Eielson and Joe Crossen in their barnstorming days, ferried supplies and furs to and from the northern shores of Siberia. A Soviet flight to the United States from Siberia in 1934, the Post and Gatty flight around the world, and Post's solo flight around the world were among the few flights made in this area.

Earlier in 1934, Pan American's plan to fly the northern route was presented to the Post Office Sub-Committee of the Appropriations Committee, United States House of Representatives. A map was prepared, showing the planned route via Alaska and Siberia to connect with Pan American's affiliate, CNAC, at Peiping. The Postmaster-General for several years past in his annual report had recommended that Alaskan air services be improved, and in August 1934 it was announced that Harllee Branch, Second Assistant Postmaster-General planned a trip to Alaska to investigate the possibility of air mail routes to that territory. With the arrival of Harllee Branch in Alaska, Pan American proceeded with a proving flight across the Bering

36 PA-113, p. 8.
Strait into Siberia. The flight left Nome, Alaska, on September 3, 1934, to survey conditions along the route. The pilot was Joe Crossen, then Chief Pilot for Pan American’s Alaskan operations. Included among the passengers were Robert Thach, a vice-president of Pan American, Branch, of the Post Office Department, and local airline officials. Anthony J. Dimond, Delegate to Congress from Alaska, also accompanied them on the Alaskan portion of the flight. The trip proceeded without incident except that the flight was terminated, due to inclement weather, at Uelen (Wellen), just across the Bering Strait from Nome, instead of at Anadyr as planned.

There was very little publicity concerning this flight which, if successful, would have meant that a transpacific route had, to all intents, been established. This fact was noted by Laurene D. Lyman, aviation feature writer for the New York Times, in September 1934. In commenting on two dispatches from Nome mentioning the flight, he noted that "squeezed among stories receiving much greater space in the newspapers last week was a tiny dispatch sent from Nome, Alaska." In the following month, Mr. Lyman again alluded to these plans, remarking that "negotiations are already underway with Soviet Russia for a co-operative

PA-113, p. 7.

service over Europe and Asia in which Russian enterprise and Pan American technical experience are to be combined to start a system."\(^{40}\)

Despite the survey flight into Siberia and the Post Office Department's interest, the talks bogged down, apparently because of the basic political differences between the two nations. Accordingly, early in 1935, it was decided to develop the Central Pacific route instead.\(^{41}\) This route had been considered as an alternate route ever since the decision had been made to fly the Pacific. Although more overt efforts had been made to realize the Great-Circle route, because of its inherent advantage in distance, surveys in the Central Pacific had proceeded simultaneously with the Northern Pacific project.\(^{42}\) Possible bases had been located on American territory, so that there were no problems there concerning sovereignty. The Philippine Government had assured Pan American that a franchise would be granted. Groundwork for a connection to the Asiatic mainland had been laid in 1933 by the surveys conducted between Manila and Hong Kong, so that any further difficulties encountered on this route would be more technical than political.

\(^{40}\) Ibid., October 21, 1934.

\(^{41}\) PA-113, p. 8.

\(^{42}\) PA-2, pp. 5-6.
For the general development and consideration of transpacific flying, Pan American Airways Corporation, the parent company of Pan American Airways System, organized a subsidiary company to conduct Pacific operations. On December 24, 1932, the Pacific American Airways Company was incorporated in the State of Nevada. Later the name was changed to Pan American Airways Company (Nevada). To facilitate the actual development of the transpacific route, the Pacific Division of Pan American Airways Company (Nevada) was established in January 1935 at Alameda, California, under the direction of Colonel Clarence M. Young, and forty other experienced airmen of the company.

There were other considerations that contributed to the rapid development of the Central Pacific route, once the decision had been made to utilize it. Among these were the evident interest of the United States Government in the establishment of such a service to the Orient; the anticipated delivery of aircraft capable of flying long over-water distances; the efforts of European airlines to expand their operations in the Far East; and the machinations of Japan.

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43 CAA-I, p. 387.
44 Ibid., p. 5.
Public announcement of Pan American's plans to fly the Pacific were made in the spring of 1934, although it is not clear whether the reference made was to the Northern or Central route. The decision to fly the Central Pacific was not finally made until 1935. During this period there were various rumors about other companies interested in transpacific flying, some of the supposed contenders being Transcontinental and Western Airlines, Inter-Island Airways, and Transpacific Airways.

The planned Pan American route was from Alameda, California, to Manila in the Philippine Islands via Hawaii, Midway, Wake, and Guam, with a projected terminus at Macao or Hong Kong and an eventual linking with CNAC in China.

Midway Island, 1,304 miles northwest of Honolulu, had been occupied by the Commercial Pacific Cable Company as a way station for its transpacific cable, and had been under the jurisdiction of the United States Navy Department since January 20, 1903. Its use as an airbase had been considered as early as 1920, when the Navy investigated the possibilities of developing a transpacific air service. It had again been mentioned as an air base in 1925 and 1927. By 1935 Midway was occasionally visited by Navy patrol flights from Pearl Harbor, Oahu, so that it was on a fairly

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47 PA-113, p. 8.

well-charted air route. The island was surveyed for Pan American in December 1934 by Clarence H. Schildhaurer, who found it satisfactory for the proposed air base. \footnote{Ibid., December 22, 1934. The trip was made aboard the cable ship Dickenson.}

Wake Island, 1,185 miles southwest of Midway, was the next proposed stop. It had been claimed for the United States by the Wilkes Expedition in 1841 and occupied for a short period by the United States in 1899 as a result of the Spanish-American War. It had been infrequently visited until its key position in the Pacific air track was noted. On December 29, 1934, by Executive Order No. 6935, \footnote{Ibid., March 13, 1935.} Wake was placed under the control and jurisdiction of the Navy Department. By order of Navy Secretary Claude Swanson, surveys were made by the Navy in 1935 to "ascertain its suitability as a way station in future commercial trans-Pacific flights." An amphibious plane from the Navy Ammunition Ship Nitro surveyed the island while the ship delayed at Wake on a routine trip from Guam to Honolulu.

The island of Guam, 1,508 miles southwest of Wake, had been ceded to the United States by Spain as a result of the Spanish-American War and on December 23, 1898, had been placed under the control of the Navy Department by an executive order issued by President McKinley. Surveys were for the most part unnecessary because of a long occupancy,
and adequate information was available as to its conditions and facilities.

Manila, 1,589 miles due west of Guam, was the terminus of the route until permission could be gained to land on the Asiatic mainland. Securing permission to land at Manila was somewhat difficult, as the Philippines had just recently become an autonomous Commonwealth and were jealous of giving up any of their recently acquired rights to "foreigners." In January 1935, when asked if the Navy might build a commercial base on Navy property in the Philippines, Secretary Swanson had said, "The only thing that prevented us was the feeling that Japan might not like it."51 As it was, the bases at Honolulu, Midway, Wake, and Guam all utilized Navy property. One month earlier, Senator McAdoo of California, who was in Manila to consider possible changes in the Independence Act for the Philippines, had said: "if the proper encouragement is given in the way of necessary facilities and necessary rights to the men of Pan American... successful commercial airline service will be put into operation within the next twelve months."52

Pan American had applied for a franchise in the Philippines in 1933, and since then had been vainly seeking permission to land. In July 1935 application was again

51 Ibid., January 23, 1935.
filed, but it did not request permission to operate between the islands, as had previously been done. Turbulent political conditions occasioned by the recent granting of autonomy delayed approval by the Philippine Legislature until October 17, 1935, when permission was finally granted for the use of facilities in Manila Bay.  

Permission for Pan American to construct air bases and other facilities at Midway, Wake, and the use of certain facilities on Guam was announced by Secretary of the Navy Claude Swanson on March 14, 1935. Public assurance was given that these permits did not grant exclusive rights, but that other airlines might gain leases there as well. The permits were revokable and were signed on March 12, 1935.  

The California terminus, located at Alameda, was secured by a lease of the Alameda City Airport in January 1935. Operations remained there until 1939, when they were moved to newly constructed Treasure Island, site of the San Francisco World Fair.

The facilities in Hawaii were at first planned for Kaneohe Bay in Oahu, and authority was granted by the Board of Harbor Commissioners for the use of that area. It was anticipated that Pearl Harbor would be used until a

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54 PA-2, p. 6.
permanent base could be built at Kaneohe, but subsequently, Pearl Harbor was found to be a more suitable base, and in November 1935 a lease was secured there for some two acres of private property. This was done with the approval of Admiral H. E. Yarnell, Commandant of the 14th Naval District, inasmuch as use of the adjacent waters had had to be cleared by the Navy Department.

In January 1935, Secretary Swanson announced that Pan American had applied for island leases on Midway, Wake, and Guam “and that the Navy would sign them.” Pan American then began to assemble at San Francisco cargo and equipment necessary to build, equip, and maintain these Pacific island bases. In March the 15,000 ton steamer North Haven was chartered and proceeded to Pier 22, San Francisco, to load. Awaiting her on the pier were “two complete villages for Midway and Wake, five air bases, a quarter of a million gallons of fuel, forty-four air line technicians, a construction force of seventy-four, food to subsist them for months,” and many other items essential to the operation. The trip lasted three months and cost approximately $2,000,000 in labor and equipment.

The technique of cargo handling and equipment used in World War II Pacific operations for off-shore landings had

56 PA-2, p. 6.
not yet been developed, so the expedition faced handicaps unfamiliar to those acquainted with the more recent history of Pacific freight operations. Goods were loaded in sequence, so that when the ship arrived at each island the cargo assigned to that base would be on top and readily accessible. The bases at Honolulu, Guam, and Manila presented no real problem, for these ports had regular facilities for unloading. However, the situation at Midway and Wake was more difficult as there were no regular port facilities.

The North Haven departed San Francisco on March 22, 1935, stopping at Honolulu, where she discharged cargo destined for that port and took on additional men for construction work on the other islands. The ship arrived at Midway on April 12, departing May 1st. While at Midway the ship had to anchor four miles from shore, lightering her cargo in through heavy swells. Construction projects consisted of living quarters, windmills, a radio station, power house, cold storage plant, mess hall, shops, offices, and seaplane docks projecting 300 feet into the lagoon. When the North Haven departed, she left behind 37 men and some 2,000-odd tons of cargo to complete the job.

The building program at Wake was on the same order as that at Midway, except that there were even more difficult problems to be faced. Wake Island consists of three separate islets, Wake, Wilkes, and Peale. The North Haven had to
anchor at sea in the lee of the group and lighter the cargo to Wilkes. There the equipment had to be transferred to a jury-built hand railway and moved across Wilkes, again loaded on lighters and transported to the permanent site on Peale. The lagoon at Wake was found to be extremely cluttered with coral heads which had to be cleared, consuming much time and expense. There was no sub-surface fresh water, as had been expected; consequently, all water had to come from a distillation plant that proved to be inadequate for the job, and another plant was constructed on the spot to supplement the water supply.

The North Haven departed for Guam on May 29th. There facilities originally built for Marine aviators were turned over to the use of Pan American, so that the problem was one of adjustment rather than original construction. From Guam the ship proceeded to Manila, completing the outbound trip.

On its return trip, the North Haven picked up at Guam tons of sacked soil to supplement the sterile sand of Wake and Midway, so that the airport staff and future passengers could have fresh garden vegetables. At the same time the construction crews on those islands were picked up for transportation back to San Francisco, arriving there on July 28, just 125 days from the date of departure. In this time the bases had become operational and one-half
the route, from Alameda to Midway, had been actually flown.  57

The planning and development of the seaplanes necessary to fly this route extended back to 1931 when the general plan for oceanic flying was first formulated. In that year, Pan American sent letters to the leading aircraft manufacturers requesting the development of a "high speed, multi-motored flying boat having a cruising range of 2,500 miles against 30-mile headwinds, and providing accommodations for a crew of four, together with at least 300 pounds of air mail." In 1932, both Sikorsky Aviation Company and the Glenn L. Martin Company submitted bids for such aircraft which included accommodations for passengers.  58 In April, 1933 contracts totaling $1,750,000 were let by Pan American to Sikorsky and Martin for the construction, by each company, of three large flying boats. 59 These orders were filled in 1934, when each company delivered its model to Pan American, the Sikorsky S-42, and the Martin M-130. The S-42 was used for the Pacific survey flights, whereas the M-130 was to be used for the inauguration of Pacific commercial flights.

The first test flights for the Pacific were not conducted over that ocean, but in the Caribbean area.

57 For a more detailed description of the North Haven Expedition, see William S. Groooh, Skyways to Asia (New York, 1936).

58 PA-2, p. 3.

Pan American had been flying the Caribbean since 1927 and was better prepared to test their new long range equipment there. On March 23, 1935, the S-42, modified by sacrificing passenger space for crew and fuel, made a record non-stop round trip from Miami to the Virgin Islands, a distance of 2,504 miles. On the basis of this test and other technical improvements, the S-42 was ferried, via the Gulf of Mexico, to Alameda. Through the courtesy of the Navy Department, facilities of the Naval Air Station at San Diego were temporarily lent to Pan American for this ferry flight.

With the modified S-42, four survey flights were flown across the Pacific during the fall of 1935 over all sectors of the route except that between Guam and Manila. The first flight departed from Alameda on April 16, 1935, arriving in Honolulu 17 hours and 45 minutes later. It carried a crew of six and 10,000-odd pieces of philatelic mail and returned on April 23, 1935. On June 12, the "clipper" departed from Alameda to survey the Honolulu-Midway sector, returning to California on June 21. On August 9 it again departed from Alameda and surveyed the Midway-Wake sector, returning to the United States on August 28. The last flight departed from Alameda on October 5 and flew the Wake-Guam sector, returning October 24. All these flights were without incident, flying over waters that had never before been flown by commercial aircraft.
The more technical aspects of the Pacific operation need not be mentioned in detail; however, it would be well to bring out its salient features. Pan American, with the co-operation of others, had developed the foremost seaplanes in the world, the Sikorsky series, the Martin M-130, and later the Boeing B-314. The M-130's realized characteristics were:

- **Take-off gross weight**: 52,000 pounds
- **Wing Span**: 130 feet
- **Height**: 24 feet
- **Length**: 90 feet, 7 inches
- **Wing Area**: 2,170 square feet
- **Engines**: 4 Pratt & Whitney with 900 BHP at take-off
- **Passenger capacity**: 41 (maximum under ideal conditions)
- **Fuel Capacity**: 4,077 gallons
- **Cruising Speed**: 156 m.p.h.

The M-130 succeeded in lifting the highest ratio of useful load to gross weight ever developed by a United States transport aircraft up to that time, and it achieved many other notable firsts. The cost of these planes averaged $417,201.60 per unit. The Martin "clipper" was also the first to provide a maximum amount of comfort for the crew and passengers. It featured sleeping berths and had the first cooking galley ever installed aboard any commercial passenger aircraft.
Provisions were made for multiple crews so that the crewmen would not be required to be on duty during the entire flight. The pilots were trained to handle all specialist jobs — navigation, communications, engineering — and were able to relieve these particular specialists. The flight deck was organized so that each member had his own area in which to work instead of being crowded into a narrow flight deck. The work of the flight crew consisted — exclusive of passenger service — of piloting, over-all direction of flight, navigation, engineering (control and care of the engines), and communications.

This new concept of crew organization had been anticipated in 1931 by Clarence H. Schildhauer, a Pan American executive, when he described how a crew should be organized. "None but an experienced seaman can command. The question of piloting skill is no more important with large planes than with small, but the need for commanders with stamina and executive experience in a degree comparable to the present masters of ocean liners is of paramount importance." 60

Until the establishment of the bases at Midway and Wake, there was a gap in radio communications between Guam and Honolulu. Again anticipating government approval to build bases in the Pacific, Pan American applied to the

60 Time, September 7, 1931.
Federal Communications Commission in February 1935 for permission to construct a point-to-point radio system connecting all stations in the Pacific. The application was approved April 3, 1935.

This radio system, essential to the total operation, was one of the most important items of cargo on the North Haven expedition. It consisted of the first long-distance radio direction-finder, with ranges up to 1,500 miles, so that aircraft were able to maintain a single line position on any sector of the Pacific track and keep a relatively constant course. This and other items of radio equipment were developed and built by Pan American.

In addition, new navigational equipment was developed, combining the direction-finder and celestial navigation with dead reckoning; new techniques in landing and take-offs were developed; methods in night operations peculiar to the Pacific, where landing areas were limited or unprotected from the open sea, were improved, and new items in safety and emergency equipment were added.

Under provisions of the Foreign Air Mail Act of 1928, the Postmaster-General could award contracts on competitive bid for air mail service between the United States and

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63 Ibid., p. 15ff.
designated foreign nations when, in the opinion of the Postmaster-General, the public interest would be benefited. Early in 1934, the President of Pan American, Mr. Trippe, announced that Pan American would fly the Pacific, a project on "which Pan American had been working for four years," and that "the administration . . . and in particular the Postmaster-General have evidenced interest in the early establishment by American enterprise of transpacific and transatlantic air services." Later, in a letter to the Postmaster-General dated October 10, 1934, Mr. Trippe briefly outlined the history of the development of the projected Pacific service and informed him that at the present time it appeared practicable to institute a service to the Orient. Further, in view of the interest of the Postmaster-General, Pan American would keep him informed of their progress and development so that the Post Office Department could consider the feasibility of transportation of mail across the Pacific. The Postmaster-General replied on October 12, 1934, assuring the company of the Post Office Department's deep interest in transpacific air mail as well as the general interest the Federal Government took in both the establishment of overseas air mail and the development of a transpacific service.

65 Ibid., October 15, 1934.
To supplement the projected transpacific service, Pan American began negotiations in November with Matson Navigation Company and Inter-Island Steamship Company, operators of Inter-Island Airways concerning the Hawaii-California sector. Both Matson and Inter-Island had been contemplating a Hawaii-California service since 1929 and had conducted studies and surveys in 1934 for such a service. 66

The companies on June 20, 1935, agreed that:

(1) Matson would transport baggage and other heavy items of passengers between California and Hawaii; (2) Matson steamers would furnish weather data to Pan American; (3) Inter-Island would be the exclusive general agent for Pan American in Hawaii; (4) a joint company would be formed, consisting of the signatories, to conduct a West Coast-Hawaii airline at a future date and other nominal services. 67

In view of the law and various assurances that the mail pay would be an actuality, Pan American proceeded to carry out plans to fly the Pacific. Yet, as the venture depended upon Congressional appropriations for paying subsidies, the Post Office Department, as late as March 1935, was favorably disposed but without the funds and could not

66 Civil Aeronautics Board, Decisions of the Civil Aeronautics Board (Washington, 1945), III, 542. Hereafter cited as CAB-III.
guarantee the appropriations. However, on August 12, 1935, the Post Office Department advertised for bids for a weekly air mail service to the Orient via San Francisco, Honolulu, Midway, Wake, Guam, Manila, and Canton, China. The bid was to be submitted on or before October 21, 1935, with contracts to run for ten years beginning at the option of the contractor, but not less than one year from the date of the award. Although the Postmaster-General was the final arbiter in the decision to award the contract, the Secretaries of State, Commerce, War, Navy, and the Attorney-General had to pass on the bid "inasmuch as the object of the service is not only the transportation of mail but the promoting of more friendly and better trade relations with the Far East."

The contracts also carried provisions concerning frequency, efficiency, non-performance, and other administrative matters.

On October 21, Pan American submitted the only bid for the air mail route to China, calling for a maximum payment of $2.00 per mile for a load not exceeding 800 pounds, plus $1.00 per pound per 1,000 miles for any mail in excess of 800 pounds. The bid was accepted on October 24, 1935, and the final contract was signed on the following day. In addition it was stipulated that if landing rights could not be secured at Canton, a point adjacent thereto.

68 Business Week, March 16, 1935.
would be satisfactory, or the service could be terminated at Manila, pending the securing of rights on the Asiatic mainland.

By the time the final signatures had been affixed to the contract (Foreign Air Mail Number 14), the final survey flights had been completed in the Pacific, the island bases had been constructed and were operational, and the necessary equipment, as specified by the mail contract, was available. Transpacific air mail service was about to be a realized fact.

On November 22, 1935, the first scheduled flight, aboard the new Martin M-130, China Clipper, left Alameda for Manila and return. This departure was attended by the appropriate fanfare. Governor Merriam of California proclaimed the day as "Pan American Airways Day." Witnessing the inauguration of this service were some 25,000 people, lining the shores of the Bay. Among them were Postmaster-General James A. Farley, Governor Merriam, and President Juan T. Trippe of Pan American. The scene was broadcast on a national and international radio hook-up, linking the voices of Mr. Trippe, Governor Joseph P. Poindexter of the Territory of Hawaii, in Honolulu, and Manuel L. Quezon, President of the Philippine Commonwealth at Manila. Each station on the route signified that it was ready to receive the "clipper." Twenty-one hours and two minutes later the China Clipper landed at Honolulu, completing the first leg.
of the trip. Six days later, after 60 hours of flying
time, the aircraft landed at Manila, completing the first
half of the first commercial flight across the Pacific.

The development of a second Pacific route over the
7,000 mile route from California through Hawaii to
Australia and then on to Manila paralleled the activities
that had led to the creation of the Central Pacific route.

Nine days later, December 6, the "clipper" returned to
Alameda, completing the round trip.

On the outbound trip 1,837 pounds of mail were
carried and 1,789 inbound, which was exceptional. The Post
Office received more mail revenue than it paid in mail
subsidy on that flight. 70 Average mail loads at San
Francisco in the succeeding years averaged 400 to 600
pounds, with a substantial portion destined to or
originating at Honolulu.

In the next few months, authorization to carry
passengers and air express was received, and service was
duly instituted. Franchises were soon gained to fly into
Macao and Hong Kong, and in the following year service was
extended to these points, with an extension of the route
to Singapore, which was approved in late 1941.72

170 "Pan American Airways," *Fortune,* XIII (April, 1936),
171.

71 See the *Annual Reports of the Postmaster-General,*
1937-1941.

72 Details of the period between 1936-1941 are covered
in Chapter V.
CHAPTER IV

SOUTH TO THE ANTIPODES

The development of a second Pacific service over the 7,000 mile route from California through Hawaii to Australasia to a large extent paralleled the activities that had led to the creation of the Central Pacific route. Preliminary studies were made covering most aspects of the route: the commerce of the area, possible landing bases, meteorological conditions, communication facilities, and the like. Later a physical survey covering the major portion of the route was made prior to actual construction work and flying of the route, as had been done in the Central Pacific. Again the projected terminus was on foreign soil, so that the problem of gaining rights and concessions there plagued Pan American as it had in the Orient.

In addition, the development of this route precipitated a scramble between the United States and Great Britain for island bases and raised long-dormant questions of sovereignty concerning these islands. This situation led to a unique co-operation between Pan American and the United States Government in order to secure these bases and utilize them for commercial purposes before other nations could claim them. To effect these claims some of the early surveys and expeditions were conducted with considerable secrecy.
The development of the South Pacific route may be divided into two phases. First was the original planning and development of the route from Honolulu to Auckland, New Zealand, via Kingman Reef and Pago Pago, American Samoa. Then came the second phase which began with the problem of resolving the question of sovereignty over several Central Pacific island groups, and ended with the final establishment of the route to the Antipodes via Canton Island and Noumea, New Caledonia.

Communication between Australia and the United States in the thirties and forties was infrequent. There were no direct cable connections, the only service being over the British cable from Vancouver, British Columbia. Surface traffic was carried on either by the American Oceanic Steamship Company, a subsidiary of the Matson Navigation Company, and British Canadian-Australasian Line, Limited. Each of these lines offered only one round trip every four weeks.

Beginning in 1932 preliminary studies on trade conditions and transport were conducted by Pan American, culminating in a report in 1933 showing the feasibility of an air route. In view of infrequent shipping schedules, relatively insecure cable connections and the impending expansion of British, French, and Dutch aerial services in that area, it was felt that early establishment of such a route was indicated. The impending linking of Singapore and
Australia by Imperial Airways, thereby establishing direct air connections with London, and the possibility that business might be drawn in that direction, rather than by the shorter route via the United States, also heavily favored an early establishment of an air route to the United States.¹

The interest of the United States Government in the South Pacific was stated early in 1935 by William T. Miller, Superintendent of Airways, Bureau of Air Commerce, Department of Commerce, when he remarked that air connections to the Antipodes should be established in the near future, regardless of business demands, because "business will follow." Such an air line, he said, should be financed "partially by the government and partially by private companies operating them."²

In the meantime more active plans were being pursued by Pan American to effect the route to the South Pacific. In March, 1934, a departmental research program was instituted to make extensive studies into the problems involved in flying south from Honolulu. In July, 1935, an expedition was sent into the South Pacific to follow up the preliminary surveys that had been made, and to make marine and weather surveys in the island groups visited.

¹PA-2, p. 23.
This expedition was the subject of much conjecture during the course of the survey and for some months thereafter. Headed by Doctor Dana Coman of Johns Hopkins University, the expedition aboard the yacht Kinkajou left Honolulu for a cruise to the South Pacific, visiting Baker, Jarvis, Howland, and other islands. At that time Dr. Coman disclaimed any association with an air line, although he did confer with Pan American representatives in Honolulu.

Although the yacht itself was well equipped for aerological and radio research, the stated purpose of the trip was to study fish, birds, game, and soil. It was suggested by the New York Times, however, that the fact that the expedition received the "co-operation of the Coast Guard, Navy and Pan American Airways indicated the expedition is mainly aeronautical. It is believed the study of birds and fishes was given as the main purpose because the sovereignty of the islands is still questioned." The non-aeronautical purpose of the expedition was still insisted upon as late as November 1935 after plans to fly to the Antipodes had been announced by Pan American. In fact it was then claimed that observations on the islands were taken "solely because of their deposits of guano."

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3 Baker, Jarvis, and Howland were occupied by Department of Air Commerce employees in the spring of 1935.
The matter was further discussed for some time in the Pacific Islands Monthly, in which John Williams maintained that Jarvis, Howland, and Baker islands were surveyed for the purpose of a landplane airport in a projected service to the South Pacific. 6 This allegation was denied by Pan American. 7 However, Mr. Williams, in defending his position, quoted a letter from Dr. Coman and from Pan American commending him for keeping quiet about the expedition at the time 8 and stating that "we were particularly concerned at that time with anyone connected with the purely commercial aspects of the expeditions discussing aeronautical matters in a positive tone that could not entirely be substantiated. We are sure you appreciate the situation." 8 This secrecy was maintained so as not to draw the attention of the British to the islands that had a potential value to Pacific aviation. Furthermore, the United States hoped to establish claim to these islands of doubtful sovereignty by occupation before the British could do so.

From the results of the Coman expedition, as well as from other studies made in the South Seas, two possible routes to the Antipodes appeared to be feasible. The first

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7 Ibid., VIII (March 24, 1938), 8.
8 Ibid., VIII (May 25, 1938), 50.
went via Kingman Reef and Pago Pago, both undeniably American possessions, the second, by way of Canton Island and Noumea in French New Caledonia. The second route was found impossible to use at this early date, as both Great Britain and the United States claimed sovereignty over Canton. Consequently there was no real legal basis upon which Pan American could be granted a concession to build a base there. As a result attention was directed to the Kingman Reef-Pago Pago route.

On September 25, 1935, Mr. Harold Gatty, a Pan American representative, announced in Auckland that Pan American was prepared to fly to New Zealand if landing rights could be granted there. Although negotiations were carried on solely with the officials of New Zealand, the aviation policy of the United Kingdom was a factor to be considered. At this time the British Government was attempting to establish an "All-Red" route around the world and was seeking to gain reciprocal rights for their carriers in any negotiations. In line with British policy Australia asked reciprocal rights, which Pan American could not grant, but the New Zealand Government acted against Empire policy and granted Pan American landing rights on a unilateral basis. At the time the Pacific Islands Monthly erroneously

9 Smith, Air Transport in the Pacific Area, p. 67.
declared that reciprocal rights had been granted. The franchise with New Zealand was signed on November 22, 1935, the same date that the Central Pacific route was announced. It was stipulated that the service must be established by December 31, 1936, a date later extended one year, because of delays in establishing the route. 

During the discussion for the one year extension the question of reciprocity again arose, but the original agreement was extended without any change on March 11, 1937. The Pacific Islands Monthly, however, claimed that there was a clause in the agreement "that if a British company should fail to obtain similar facilities from the United States Government for a transpacific service the Pan American agreement could be cancelled after 12 months notice." At that time there were no indications that British interests were ready or able to operate a transpacific route.

When the question of landing rights at Auckland had been resolved, Pan American began to ready the way stations

10 VI (December 20, 1935), 5.
11 PA-2, pp. 23-24.
13 VIII (October 22, 1937), 5.
14 In the fall of 1935 British Aircraft, Limited, bought the specifications for the Sikorsky seaplane, S-42, for $500,000 from the United Aircraft Corporation in order to develop a practical seaplane. Pan American considered the S-42 as inadequate for Pacific commercial flights. *Time*, October 7, 1935.
to receive aircraft on the route to the Antipodes. Kingman Reef, 1,067 miles southwest of Honolulu, was the first stop. It was composed of a series of barrier reefs, forming a sheltered lagoon suitable for seaplane operations. The reef had been discovered by an American ship in 1798, claimed as a United States possession under the provisions of the Guano Act of 1856, and reclaimed by a group of adventurers from Honolulu in 1922. By Executive Order Number 6935, December 29, 1934, it was placed under the jurisdiction of the Navy Department. As there was no land area large enough to accommodate a complete base, it was decided to station a ship there as a floating seadrome. The supply ship North Wind was directed to moor at Kingman Reef to service the impending survey flight. Later the four-masted schooner Trade Wind was purchased to be permanently stationed at Kingman Reef to service the regular South Pacific flights.

Tutuila, American Samoa, had been recognized American territory since 1899. It was a high island of volcanic origin similar to the Hawaiian Islands, offering adequate facilities for an air base. By order of the Secretary of the Navy, February 19, 1900, three days after the United States Senate had ratified the Tripartite Convention for divided control between the United States and Germany, the American sector was placed under Navy control. Since that
time it had remained under the jurisdiction of the Navy Department.

On March 11, 1937, Pan American announced that survey flights over this route would commence the following week. The survey flight that departed from Honolulu on March 23, 1937, proceeded uneventfully to chart the air track to Auckland, arriving there on March 29, after an elapsed flying time of thirty-two hours. The plane departed from Auckland on April 3, arriving in Honolulu on April 9, without incident, successfully completing the survey. The flight was commanded by Captain Edwin C. Musick, who had conducted the original Central Pacific surveys. The "clipper" used on these surveys was a Sikorsky S-42-B, an improved version of the S-42 that had been used on the original Pacific survey flights.

Because of the time limit set forth by the New Zealand franchise, it was decided to initiate the South Pacific service on a fortnightly basis using the S-42-B Samoan Clipper, pending delivery of the Boeing B-314. The second flight proceeded from Honolulu on December 23, 1937, carrying neither mail nor passengers on the outbound trip, but on the return trip some regular mail and...

16 The S-42-B was not judged practicable for regular Pacific service, as the greater portion of the cabin load was taken up by fuel reserves.
complimentary express was carried. The Samoan Clipper departed from Honolulu on January 9, 1938, on the third outbound flight to the Antipodes, again commanded by Pan American's senior pilot, Edwin C. Musick. Seventy-five pieces of express and no mail were carried. Because of the lack of funds for subsidy, the United States Post Office Department had been unable to authorize Pan American to carry mail south. Shortly after departing from Pago Pago, January 11, 1938, the "clipper" disappeared. The exact cause of this accident remained undetermined, although officials of the Bureau of Air Commerce stated that the crash was caused by "fire and explosion associated with the dumping of fuel ... some emergency arose at that time which dictated an immediate landing at sea, during the course of which fire and explosion occurred in the hull." 

17 On December 2, 1937, in accordance with the provisions of the Air Commerce Act of 1926, Pan American applied to the Department of Commerce for authority to conduct operations to Auckland. Temporary permission was granted on December 22, 1937, for the transportation of property between Honolulu and Auckland, but expressly forbidding the carriage of passengers for hire. Civil Aeronautics Journal, July 1, 1940.

18 The interest held by the Pacific Coast in Pan American's Pacific venture was evidenced in the memorial services conducted by the City of San Francisco for the lost crew. The services were held in the City Hall on January 24, 1938, "to pay tribute to the memory, character and integrity of Capt. Ed. Musick and his Associates."

Thereafter, because of a shortage of aircraft, the project had to be abandoned. Before the loss of the Samoan Clipper plans had been made to operate an express service to Auckland, beginning with the ill-fated flight. At no time was it contemplated to carry passengers, inasmuch as the pay load of the seaplanes was very limited.

In the period during which the air line had surveyed the South Pacific route and conducted flights in the area, through the spring of 1938, there had been a series of claims and counterclaims, between Great Britain and the United States, over the ownership of several coral islands. The Phoenix Islands, particularly Canton and Enderbury, and the Line Islands of Baker, Howland, and Jarvis were the islands around which the controversy centered.

These islands lay south and west of the Hawaiian chain, between 10° North and 10° South latitude. Canton was a typical atoll. Irregular in outline, composed of bits of land which projected out of the water comprising a series of disconnected islets surrounding a central lagoon. Baker, Howland, and Jarvis were coral outcroppings, a few feet above sea level, with only slight depressions marring the flat surface of the islands. During the guano rush of 1850-1860 many such islands had been claimed by various nations worked by their nationals, and then forgotten. At that time they had no practical value once the guano deposits had been exhausted.
Probably the first "rediscovery" of these "unknown" islands occurred in 1928 during Kingsford-Smith's flight from Oakland, California, to Sydney, Australia, during which he sought out emergency landing sites along his route. Renewed rivalry over the islands was triggered by the successful inauguration and operation of the Central Pacific route to the Orient by Pan American. The air line had pointed out the new status that these islands could assume and cursory investigation showed the lack of clear title to them. The United States Government, seeing the value of these bits of land to military and commercial aviation took immediate steps to secure them.

The American effort to secure title was called "The Line Island Project" by the various agencies participating in the affair. Internationally it was recognized as "the scramble for air bases." The actual project began early in 1935, when the President of the United States and the Secretary of Commerce formulated plans to occupy Baker, Howland, and Jarvis islands. The Department of Commerce which was charged with problems of commercial aviation was given the task as the project was primarily a civil one. William T. Miller, Bureau of Air Commerce, was assigned to direct the project. He was sent to Honolulu to organize the expedition, to study the possibility of an air route to the South Pacific, and to locate personnel on these islands.
immediately in order to substantiate United States' claims thereto.  

The United States Coast Guard Cutter Itasca left Honolulu on March 20, 1935, to land colonists on each of three islands -- Jarvis, Baker, and Howland -- in order to reestablish sovereignty, to gather meteorological information and to prepare landing fields. The trip was under the supervision of William T. Miller, who landed four colonists on each island; Jarvis, March 26, 1935; Howland, March 30; and Baker, April 3. Captain Harold A. Meyer, United States Army, was in charge of a detail of Army personnel who established the camp on each island. These particular islands were chosen for occupation because at the time it was assumed that land planes would be utilized on this route, and Jarvis, Baker, and Howland were particularly suited for landport construction. In addition Kingman Reef, Palmyra, Swains, and Tutuila islands were surveyed for suitable landing sites, but nothing further was done on any of them at that time. Some sort of an arrangement was believed to have been worked out between Transcontinental and Western Airlines and Pan American for the use of DC-2

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20 Edwin North McClellan, "Jarvis to Baker to Howland," Paradise of the Pacific, XLVIII (September 9, 1936), 5.

aircraft on this run. These islands would then be the natural landing fields between Honolulu and Samoa. As it developed, land planes were never used on transoceanic routes prior to World War II, so that these islands were never used, as they were unsuitable for seaplane operation. During 1935 two other trips were made by the USCG Cutter Itasca to these islands to deliver supplies and to relieve personnel.

These plans and expeditions were carried out quietly so as not to excite attention until United States claims could be substantiated. In October 1935, the Pan Pacific Press Bureau announced that Mr. J. Walter Doyle, who had returned to Honolulu from a trip to the islands had refused to have his baggage inspected by customs personnel on the grounds that he had never left United States territory. Personnel of Time magazine then checked with the United States Department of State and the British Embassy in Washington, but could not get any statement from either source as to ownership. In reality both the State and Commerce Departments were a little embarrassed when the project thus became public.

When the American occupation became known, both the

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22 Pacific Islands Monthly, VIII (February 21, 1938), 55. See also, New York Times, April 7, 1935.

23 Honolulu Star-Bulletin, June 29, 1936.

24 Time, October 28, 1935.
United States and Great Britain began to search their records in an attempt to establish prior claim over Jarvis, Baker, and Howland. In general, British claims were based upon early discovery and the working of guano deposits by British nationals. Claims to Jarvis were based upon an act of annexation when HMS Cormorant visited there in 1889.25 In 1906 His Majesty's Government had leased that island to the Pacific Phosphate Company of London and Melbourne but it is not known whether its guano deposits were worked.26 Jarvis was also listed as one of the British Line Islands in a Foreign Office publication.27

British claims to Baker and Howland were based upon earlier guano work by Britishers and by geographical inclusion when Britain, while seeking cable sites, annexed the Phoenix Group between 1889-1892.28 These two islands were also listed by the Foreign Office as belonging to the British Line Islands.29


28 Moore, op. cit., p. 572.

29 Great Britain, Foreign Office, op. cit., p. 16.
American claims to these islands consisted of one or more visits by American ship captains from the beginning of the second quarter of the 19th century. These claims were also reinforced by annexations made under the Guano Act of August 18, 1856. According to the United States Attorney-General, in an opinion in 1859, the conditions of annexation under the Act were:

1. That a deposit of guano has been discovered upon the island by an American citizen.

2. That the island is not within the lawful jurisdiction of any other government.

3. That it is not occupied by the citizens of any other government.

4. That the discoverer has taken and kept peaceable possession thereof in the name of the United States.

5. That the discoverer has given notice of the facts, as soon as practicable, to the State Department, on his oath.

6. That the notice has been accompanied with a description of the island, its latitude and longitude.

7. That satisfactory evidence has been furnished to the State Department, showing that the island was not taken out of the possession of any other government or people.30

These conditions being met, bonds or patents had been issued claiming the island or islands for the United States. Jarvis was annexed under this act under Bond Number 2, October 28, 1956; Howland under Bond Number 4, December 3, 1956.

30 Moore, Digest, I, 556.
1858; and Baker under Bond Number 1, October 28, 1893.

In the face of these claims Great Britain acquiesced to American claims for sovereignty. Formal acquisition was reasserted by Executive Order Number 7368, May 13, 1936, when the President of the United States placed these islands under the jurisdiction of the Secretary of the Interior for administrative purposes. Shortly thereafter Congress appropriated $35,000 for their administration and for construction of facilities thereon. Mr. Richard C. Black was appointed as Field Representative for the Division of Territories and Island Possessions. He arrived in Honolulu in July 1936, to take charge of the project from the Department of Commerce's William T. Miller.

At intervals of approximately three months these islands were visited by USCG cutters with food, water, equipment and changes of personnel. In addition to the USCG Cutter Itasca, the cutters Duane, Shoshone, and Taney were utilized on these trips. During 1936 the Itasca made four routine trips for supply, the building of permanent quarters and the establishment of meteorological stations. These stations relayed news of weather conditions to Honolulu so that adequate forecasts could be made for flights in this

31 Ibid., pp. 567-68.
area. The islands were abandoned in March 1936 and were subsequently reoccupied in June of the same year.

After the problems of sovereignty had been solved the islands lapsed into quiescence, playing no active part in commercial Pacific aviation, with one exception. An airport was constructed on Howland Island in 1937 for the use of Amelia Earhart Putnam on her projected flight around the world. The airfield was built under the direction of the Division of Territories and Island Possessions with construction equipment furnished by the United States Army. Unfortunately the strip was never used, as an accident during take-off from Hawaii prevented the flight at that time. Later Mrs. Putnam attempted to reach Howland from New Guinea but never arrived.

South of Baker, Jarvis, and Howland islands lay two islands in the Phoenix Group, Canton and Enderbury, which became the center of an international dispute. Title to these two islands was also claimed by both the United States Government and Great Britain. However, the matter was not

33 Honolulu Star-Bulletin, June 29, 1936.

34 An extensive search throughout the area by planes and vessels of the United States Navy failed to find any trace of the downed plane or fliers. Faint signals believed to be from the flyer were heard, however they were never substantiated. For several years afterward there was much conjecture as to whether or not the Japanese Government had shot down the aircraft as it was flying over forbidden Japanese waters. A decade later these stories were definitely disproved.
brought up during the discussions over title to the Line Islands but became the subject of a later dispute accompanied by more publicity.\textsuperscript{35}

American interest in Canton Island as an air base did not develop until after the impracticality of Kingman Reef for this purpose was discovered. It became apparent in 1938 that the Boeing B-314 seaplanes, ordered by Pan American in July 1936, would be ready for delivery in the opening months of 1939, so that it appeared feasible to reopen the route to the Antipodes. Investigation revealed that Canton Island was the only island in the area that was suitable for seaplane operations.

Canton had first come into the Pacific aeronautical picture in 1928, when Kingsford-Smith had considered it as an emergency landing site on his flight from Hawaii to Australia. The next mention of Canton was in the summer of 1937. As the island lay almost directly in the path of a lengthy eclipse of the sun to take place on June 8, British and American scientists had prepared astronomical expeditions to observe the phenomenon from that point. The Americans landed from the United States Navy seaplane tender \textit{Avocet} early in May; the British landed on May 26 from the New Zealand sloop \textit{Wellington}, each group claiming title to the island. Separate plinths, bearing metal representations of

\textsuperscript{35} The term Canton will be synonymous with Enderbury Island.
their national colors, were erected by the British and Americans, each proclaiming Canton as the property of their respective nations. The island was, nevertheless, abandoned by the representatives of both contestants when the expeditions' purposes were accomplished. 36

British claims to Canton were based on early discovery and occupation. Recorded visits were made by British ships in 1823 and in 1866. British guano companies worked the island in the eighties, and it was subsequently leased to another British guano company in 1899. Whether it was used or not thereafter was a matter of controversy. 37 Canton was also mentioned as a British possession in a Foreign Office document printed in 1920, which tacitly assumed ownership through the Order in Council of 1892 which annexed the Gilbert and Ellice Islands. 38 On August 6, 1936, the island was posted as a British possession in the name of Edward VIII, and in June 3, 1937, Canton was again posted as British territory in the name of George VI. Earlier, on April 8, 1937, by an Order in Council, Canton was placed under the jurisdiction of the Gilbert and Ellice Island Administration,

37 Bryan, American Polynesia, p. 59.
38 Great Britain, Foreign Office, loc. cit.
Stimulated by the American occupation of Baker, Howland, and Jarvis the British, in August 1937 landed two representatives on Canton with building materials and radio equipment to substantiate their claim to the island by occupation. Supply was maintained by commercial vessels on the Canadian-Australian run. Formal assertion of sovereignty was made by an Order in Council dated March 18, 1937.

United States claims to Canton followed the same pattern as the British, namely, early discovery and guano operations. During the nineteenth century there were many recorded American visits to Canton, including the Wilkes Exploring Expedition of 1838-42. It was claimed by American guano interests, although Canton was not specifically listed as being bonded under the Guano Act. Patents list two claims for Enderbury, Number 6, December 26, 1859, and Number 9, February 1860. The geographical location of Canton is only six minutes from Enderbury, so that at least one of the Enderbury claims could have included Canton, although not naming it specifically.

39 Bryan, American Polynesia, p. 55.

40 Ibid.

41 Moore, Digest, I, 567-568.
Formal assertion of ownership by United States began in March 3, 1938, when, by Executive Order 7828, the islands were placed under the control of the Department of the Interior for administrative purposes. Four days later colonists were landed at Canton, already occupied by the British, to reestablish American claims. The expedition touched off a series of discussions and rather bellicose statements between the United States and Great Britain. The Pacific Islands Monthly, for the British, and Paradise of the Pacific, the magazine which represented the unofficial American viewpoint, fought a journalistic war over the usurpation of "our" sovereign territory and gave some credence to rumors of fights and frigid formality between the two parties. 42

Prior to the British occupation of Canton, discussions had been going on for some time between the two governments regarding the status of the island. During the eleventh expedition, October-November 1937 to the Line Islands, aboard the USCG Cutter Roger B. Taney, Canton was briefly visited at which time the British occupation was first discovered. Aboard the Taney were Governor Joseph B. Poindexter of the Territory of Hawaii, Doctor Ernest Gruening, Director of the Division of Territories and Island Possessions 42

One such incident reported was that a British representative requested one of the Americans to throw a fish he had just caught back into the ocean remarking, "You can't keep that, Crown property you know."
in the Interior Department, and several others. At that
time Doctor Gruening raised a question as to the good faith
on the part of Great Britain, as both governments had agreed
not to occupy the island until title had been determined.

Returning to Honolulu the Taney was fitted out for a
special cruise to colonize Canton and Enderbury Islands.
It departed from Honolulu on February 22, 1938, landing
colonists on Enderbury on March 6, and on Canton the follow­
ing day. The colonists were directed to establish an
aerological and radio station. Despite the presence of the
British group, the United States flag was raised at 9:03 A.M.,
March 7, 1938, proclaiming the island officially an American
possession. 43 Earlier, the President of the United States
had formally claimed sovereignty over the island on March 5,
1938, and placed a document, signed on March 3, in the
National Archives. 44 The reason for this action, as
announced on March 8, was that the occupation "has no
connection with war or war plans, but was motivated by a
desire to meet the needs of commercial aviation." 45 The
following day Sir Ronald Lindsay, the British Ambassador,
delivered a note to the Department of State formally

43 Richard B. Black, "Twelfth Cruise to the Equatorial
Islands," Paradise of the Pacific, L(April, 1938), p. 34.
reserving British rights to and possession of the islands.\textsuperscript{46}

Out of the welter of claims and counterclaims a partial settlement was reached on August 10, 1938, whereby each nation would have equal privileges in using the island for commercial aviation and communication facilities.\textsuperscript{47} An agreement was reached on April 6, 1939, allowing for the joint use and administration of the islands. Under this Anglo-American condominium each nation reserved, without prejudice, its original claim to the islands. This agreement was to last fifty years and thereafter indefinitely unless it should be modified or otherwise terminated.\textsuperscript{48}

Even though the questions of sovereignty were either settled or held in abeyance, active colonization by the United States Government ceased after 1938. The Coast Guard continued to make regular quarterly scheduled trips "carrying supplies, medicines and building material for the development and maintenance of United States activities on those islands."\textsuperscript{49} These trips were made particularly in connection with transoceanic air commerce and were continued until they

\textsuperscript{46} Ibid., March 10, 1938.

\textsuperscript{47} Ibid., August 11, 1938.

\textsuperscript{48} Ibid., April 7, 1939.

were disrupted by World War II in the Pacific. 50

The government agencies involved in the total operation of the project were the Bureau of Air Commerce, which temporarily administered the islands until May 1936, when they were transferred to the jurisdiction of the Department of the Interior, Division of Territories and Island Possessions. The United States Army furnished men, materiel, and assistance on the islands; the United States Coast Guard and the Navy contributed ships, and the Navy also acted as the purchasing agent for this project. 51

The Line Island project was instigated so that intermediate stopping places could be made available to American aviation companies. Rear Admiral Frank T. Kenner, United States Coast Guard, described the operation as primarily one whereby bases were secured to effect Pan American's route to the Antipodes. "I was detailed as officer in charge of the Line Islands project after Mr. Black left," he said. "The first expedition left in a great hurry -- most of the actions taken in the Line Island project were sub-rosa. State Department of State wanted no publicity and apparently the security was well maintained. The actions taken were twofold: (1) to set up weather stations, and (2) to secure air bases for the soon-to-come Pan American Airways operation. The

50 Ibid., Fiscal Year 1940, p. 255.

51 Edwin North McClellen, "Jarvis to Baker to Howland," Paradise of the Pacific, XLVIII (September 8, 1936), 51.
first action was more or less official cover for the second reason. The main purpose of the project was to secure bases so Pan American could operate the South Pacific routes. Supply was maintained by the Coast Guard. We hauled Pan American fuel etc. as ordinary cargo. The project was probably instigated by the White House.  

Before the question of the sovereignty of Canton Island was settled, Pan American had proceeded with plans to operate to and from Canton. Experience in the conduct of the earlier South Pacific flights indicated that the Kingman Reef-Pago Pago route was impractical, because of Kingman Reef's limited land area, and that Canton Island would be more satisfactory as an intermediate base. A Pan American advance party was transported from Pago Pago aboard the Navy Tug Ontario in May 1938 to survey and lay out the air base. Permission to use the island was granted by Secretary of the Interior Ickes on April 1, 1938, although Pan American dates the license March 31, 1938. On April 13, 1939, another contract between Pan American and the Department of the Interior was signed, whereby portions of Canton Island were leased to Pan American.

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52 From an interview with Rear Admiral Frank T. Kenner, October 6, 1955, at the Headquarters of the United States Coast Guard, Honolulu.


55 PA-2, p. 28.
were leased for its use as a way station between Honolulu and New Zealand. The contract was ratified by Great Britain, reserving certain rights to use the facilities being constructed by Pan American. 56

When formal permission was granted by the United States and Great Britain authorizing Pan American to use Canton Island, the SS North Haven was again chartered by the company to carry construction crews, airport staff, and equipment necessary to build and maintain an airport there. Fortunately, the difficulties at Canton, duplicating those on Wake, were somewhat ameliorated by surveys made by Pan American in May 1938 and by knowledge of the island that was available from the colonists present there. When the North Haven departed from San Francisco on April 27, 1939, she carried 5,100 tons of cargo to build the base, including all the necessary equipment for airport operation, aircraft maintenance and supply, as well as quarters and subsistence facilities for Pan American personnel and extra items for the comfort of the coming air passengers.

On a regular quarterly cruise, the USCG Cutter Roger B. Taney left Honolulu May 20, 1939, carrying Pan American personnel to be stationed at Canton. A special trip was made to Samoa where additional Pan American material and

personnel were picked up from the abandoned base at Pago Pago for transfer to Canton. A barge used as a landing float at Pago Pago by Pan American was lost while being towed to the new station.  

The next link on the new South Pacific route was at Noumea, New Caledonia, 1,987 miles southwest of Canton. Noumea had a good protected harbor and a population of over 53,000. Permission was granted Pan American on December 22, 1938, authorizing it to construct a base at Noumea. The base was located at the Isle de Nou (Nouville), an abandoned prison camp. The yacht *Lyndonia*, probably renamed the *Southern Seas*, was purchased in March 1940 to serve as a hotel at Noumea for the passengers, as there were then no adequate hotel accommodations there. Work on the base commenced in May 1939.

Pan American had considered Suva, Fiji, which lay between Canton Island and Noumea, as a possible base. However, as the British sought equal rights in Hawaii, Suva was by-passed in favor of Noumea. Pan American had gained

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59 Ibid., X (June 15, 1940), 7.

60 Ibid., XI (October 15, 1940), 20.

61 It had been intended to sail the yacht to Sydney, Australia to accommodate Australian passengers and return to Noumea in time to meet the outbound flight from Auckland, although this plan was never realized.

a unilateral concession from the French Government, which was contrary to the usual French policy. Normally the French did not deal directly with a petitioner, but rather through diplomatic channels and demanded equal consideration for her aircraft. The reason for this shift in policy was not explained by the French.  

However, as the port was linked to the outside by one mail boat a month and an occasional cruise ship, it would be safe to assume that France would make exceptions in order to gain more frequent contacts with the rest of the Pacific world.

Renegotiation of the contract between Pan American and the New Zealand Government was concluded on July 11, 1939. It authorized the extension of the new Canton-Noumea route to Auckland, replacing the older Kingman Reef-Pago Pago route. Included in the contract was a stipulation that experimental flights should be made into Suva, Fiji, if it were feasible from a technical and operational point of view. In fact, landing rights in New Zealand were predicated upon the inauguration of a Suva service, for the New Zealand franchise was subject to review if such a service should not be approved.

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65 The previous contract was signed in 1935. See p. 97.

With the securing of rights for landing at Canton, Noumea, and Auckland, coupled with the expected delivery of the Boeing B-314, inauguration of regular scheduled service to the Antipodes only awaited authorization from the United States Government.

Survey flights were conducted with the new Boeing to Auckland in August 1939. The flight left San Francisco on August 10 and arrived at Auckland six days later. A second trip was completed in November. On each trip a number of military, naval, and civil personnel were carried as observers in order to determine whether such a route was necessary for "public convenience and necessity."

After the completion of the survey flights, formal application was made to the Civil Aeronautics Authority for permission to fly the South Pacific route on a fortnightly schedule with four-day service between San Francisco and Auckland. Hearings began in October 1939 and were concluded during the following year. On June 7, 1940, Pan American was officially authorized to carry mail, passengers and freight to Auckland via Los Angeles, Honolulu, Canton Island, and Noumea. In order to satisfy the demands of the city of Los Angeles the Authority included Los Angeles on the South Pacific run. 67 There was a serious question raised by the Civil Aeronautics' examiners as to whether the service

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67 Grayson Kirk, "Wings Over the Pacific," Foreign Affairs, XX (January, 1942), 296.
to the Antipodes was really required by public convenience and necessity. However, as the issuance of the certificate was strongly urged by representatives of the Navy and the Post Office Departments, the authority was finally granted.68

The first air mail flight left San Francisco for Auckland on July 12, 1940, aboard the Pan American Airways Clipper carrying 125,000 letters, a crew of eleven, and sixteen Pan American and government officials.69 The first commercial passenger flight left San Francisco September 13, 1940, arriving at Auckland on September 16, after 47 hours 57 minutes flying time.

In accordance with the New Zealand Government's demands that Suva should be included on the South Pacific run, Pan American decided in the fall of 1941 to begin operations into that port. The principal importance of such a stop, other than giving the Fiji Islands direct air connections, was the improvement that this station would offer to the South Pacific flight pattern. Suva, 100 miles off the regular Canton Island-Noumea sector, offered a break in the long 1,987 mile flight. Located 1,250 miles south of Canton and 850 miles northeast of Noumea, it thus permitted the allowable cabin load between the two ports to be almost

68 PA-2, p. 28. See also Chapter II, p. 46.
69 New York Times, July 13, 1940.
doubled. In addition, it afforded improved radio and meteorological control and eliminated the necessity of night landings, which were frequently necessary on the long hop between Canton and Noumea.

Application to use Suva as an intermediate landing point was made to the Civil Aeronautics Board on September 9, 1941, decided favorably on October 16, and given final approval by President Roosevelt two days later. Service was inaugurated by the inclusion of Suva on a regular fortnightly flight, arriving on November 10, 1941, with 35,000 first-flight covers in addition to regular mail. The facilities at Suva included the usual airline offices, pier, and mooring barge. The passengers were accommodated at the Grand Pacific Hotel, which was destined to become well-known to hundreds of Americans in a few short months.

Ten years after the first general plans had been laid for transoceanic flying, the Pacific had finally been conquered. With the inauguration of scheduled flights to the Antipodes, mail, passengers, and cargo were being carried to the far reaches of the Pacific. Much of this success was due to the union of vision and technical skill

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70 CAB-III, pp. 135-139.

71 Increased cabin loads, due to World War II, to the South Pacific must have caused Pan American to include this port as an intermediate stop. Otherwise the reasons given for the inclusion of this stop seem to be rather specious on the part of the airline and the CAB, as Pan American had been flying past Suva since the summer of 1940.
of the personnel of Pan American and the assistance rendered by various agencies of the United States Government, without which some of the operations would have been impossible.

By the first air mail flight was crossing the way across the Pacific, the second of the three Martin Clippers, the Philippine Clipper, was delivered to the Pacific Division and placed in service. On December 5, 1925, it departed on the second scheduled air mail flight, after a delay for weather and to accommodate a massed accumulation of mail. On this trip it carried 52,000 letters, plus three non-commercial passengers—a government entomologist and two National Broadcasting Corporation employees. The "clipper" returned to Alameda on December 25, 1925, after an uneventful flight, lasting 110 hours and 30 minutes for the complete trip.

Until the delivery of the third airplane, the Royal Clipper, in May 1926, scheduled air mail flights were maintained by the two "clipperies," albeit not without some difficulty. For despite the skill and training of the operational personnel, operations of this type were unusual and not yet routine. On December 28, 1925, the third scheduled trip departed, carrying its first mail air express, but the forwarder entered the plane at Red Shores, all flights subsequently to depart during the holiday were cancelled because of unfavorable weather. On the next scheduled flight, January 5, 1926, the Clipper Clipper was slightly damaged when it struck a submerged obstruction in
As the first air mail flight was winging its way across the Pacific, the second of the three Martin Clippers, the Philippine Clipper, was delivered to the Pacific Division and placed in service. On December 9, 1935, it departed on the second scheduled air mail flight, after a delay for weather and to accommodate a weekend accumulation of mail. On this trip it carried 15,000 letters, plus three non-commercial passengers — a government meteorologist and two National Broadcasting Corporation employees. The "clipper" returned to Alameda on December 26, 1935, after an uneventful flight, logging 118 hours and 56 minutes for the complete trip.

Until the delivery of the third seaplane, the Hawaii Clipper, in May 1936, scheduled air mail flights were maintained by the two "clippers," albeit not without some difficulty, for despite the skill and training of the operational personnel, operations of this type were unusual and not yet routine. On December 22, 1935, the third scheduled trip departed, carrying its first Pacific air express, but was forced to return because of bad weather. All flights scheduled to depart during late December were cancelled because of unfavorable weather. On the next scheduled flight, January 5, 1936, the China Clipper was slightly damaged when it scraped a submerged obstruction in
San Francisco Bay. On another attempt in early February, the China Clipper was air-borne but turned back after making only 1,000 miles in thirteen hours of flying time.  

In order to complete the bases and finish passenger facilities at Midway, Wake, and Guam, the SS North Haven was again chartered on December 3, 1935, by the Pan American Supply Company, a subsidiary formed for the main purpose of purchasing supplies. The ship loaded at Seattle and San Francisco with more than 7,000 tons of miscellaneous supplies, valued at $2,000,000. It departed from San Francisco in January 1936 and returned in May. This trip was basically organized to set up hotel accommodations including "such items as solar water heaters, pillows in lots of fifty pairs, terrace furniture, staff uniforms, bridge tables, and beach umbrellas. Again, on her return from Guam she brought many tons of rich top soil for the gardens at Midway and Wake."  

Supply in the Central Pacific was maintained by ships under charter to Pan American, averaging two trips per year. After the SS North Haven had made the first two voyages,

1 At the time it was rumored that the "clipper" was sabotaged. A cement block with spikes in it was supposed to have been purposely sunk just below the surface of the water directly in the seaplane's traffic pattern. This charge was never substantiated by Pan American. "Pan American Airways" Fortune, XII (April, 1936), 167.
2 Time, February 27, 1936.
4 PA-2, p. 22.
the SS North Wind in 1937 made two trips, including a stop at
Kingman Reef to service the first South Pacific survey
flight. During 1938 and 1939 the four-masted Schooner
Trade Wind was used to service the Central Pacific islands.
The schooner was purchased by the South Seas Commercial
Company, a Pan American affiliate, and chartered by Pan
American Airways. Originally it was purchased to be a
floating base at Kingman Reef for a year. But when the
Samoan Clipper was lost and the route abandoned the Trade
Wind was converted into a supply ship. An over-ambitious
publicity man described her as follows: "Out of the romantic
past, steeped in the sheer glamor of that age of 'wooden ships
and iron men,' comes a prototype of one of the oldest of the
ocean's conquerors. She is a full-rigged four-masted top-
sail schooner, and she comes to the aid of today's flying
clipper ships of the air." Unfortunately the ship proved
to be unsatisfactory because of the time it took to complete
a voyage and the numerous repairs that she demanded. The
Trade Wind was sold in July, 1940, after being idle since
November, 1939.

The problem of supply was acute in the case of Midway
and Wake. The other bases were either on normal shipping
lanes or located near large urban centers where purchases

5 Honolulu Star-Bulletin, February 3, 1940.
6 Ibid., January 5, 1940.
could be made locally. Guam and the South Pacific islands were periodically serviced by government ships that carried cargo for Pan American as a matter of courtesy. Upon occasion the Commercial Pacific Cable ship Dickenson carried cargo, or a passing commercial vessel would make delivery.

No record has been found of charter trips in 1940-1941, due to the international situation in the Pacific. However, Federal construction projects had been started on Wake and Midway, so that there was some surface traffic between these islands and Honolulu and other ports. The normal supply needs of the company could be maintained by government or government-chartered vessels.

The bases on the desert islands of Midway, Wake, and Canton, were all similar in description. There were cottages for the airport managers and crews, messing and radio facilities, power plants, shops, distillation units, and fuel dumps. The prefabricated hotels were of a similar design on all these islands. They were v-shaped, with two 124-foot wings jutting off the centrally-located lobby and dining room, at the point of the "V." In each wing there were twelve rooms, 16 feet by 18 feet, each with twin beds and separate shower and bath facilities.

The landing areas were located in enclosed lagoons protected from the sea. A pier extended into the lagoon to which a floating barge was attached for embarking and debarking. Facilities for maintaining and fueling the
aircraft were available at the barge. A pier was built on each island to permit delivery of material from the lighters that still had to be unloaded from a ship standing at sea. Conditions for loading were much improved shortly before World War II because of government projects, such as dredging and the building of docking facilities, that were instituted as a part of the national defense program in the Pacific. Although before the government construction program was initiated, the existing facilities had been deemed adequate by the War Department.  

In an agreement with the Railway Express Agency, effective February 1, 1936, Pan American, along with the majority of American domestic air lines, arranged for the express company to handle their air cargo shipments. Service was to include door-to-door pickup in thirty-two foreign nations in addition to the 23,000 Railway Express stations in the United States. Authorization to carry commercial cargo across the Pacific was not received from the Bureau of Air Commerce until March 1936.

In the meantime, round-trip air mail flights had proved that flying the Pacific track was safe. Each trip carried company and federal engineering and flight officers

7 See the Annual Reports of the Chief of the Engineers, United States Army for the fiscal years, 1938-1941.
8 Time, January 20, 1936.
9 PA-2, p. 22.
making observations and reports. These reports were the basis upon which authority was granted early in September 1936 to carry passengers over the route. Pan American announced on September 20 that passenger service would be inaugurated October 21, 1936. By the date of the announcement, 1,100 tickets had been applied for. As guests of Pan American, a group of newspaper representatives were the first passengers to complete a round trip. The first commercial passengers, seven in number, departed as scheduled, October 21, 1936, on the China Clipper. It completed the trip without incident, thus fulfilling plans made six years earlier. The terminus, however, was Manila, not the China coast as originally projected.

To complete the link to the China mainland, Pan American had been conducting a series of talks with the Portuguese concerning concessions at their colony of Macao; although a base at Hong Kong would have been much more advantageous because of its greater commercial importance and its air connections with Imperial Airways, Limited, Air France, Eurasia, and others. In the meantime, the British, after having demanded a quid pro quo basis, relented and authorized Pan American to use Hong Kong as its Asiatic terminus. Permission to use that port was announced by the

11 Ibid., September 21, 1936.
Hong Kong Colonial Secretary on September 12, 1936, the same day that the Pan American subsidiary, China National Aviation Corporation, received permission to extend its Shanghai-Canton route Number Three into Hong Kong. The operating permit was issued by the Director of Air Services of Hong Kong, effective September 17, 1936, for a five year air mail service to begin from April 28, 1937. The first trip to Hong Kong was made on October 23, 1936, stopping briefly at Macao, although permission to use the port of Macao was not scheduled to become effective until April 28, 1937. Among the passengers on the first Hong Kong flight were Juan T. Trippe, President of Pan American, Senator and Mrs. William G. McAdoo, and Roy D. Howard of the Scripps-Howard newspaper chain.

Although permission to use Hong Kong had been granted in 1936, scheduled service was not instituted into that port until April 1937. Since the three Martin "clippers" were attempting to maintain a 13-day turn-around service, including a two-day lay-over at Manila for a long service and crew rest, it was considered expedient to use an S-42-B "clipper" as a shuttle between the two Asiatic ports, despite the extra expense of maintaining the parts and equipment for the S-42-B

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12 Ibid., September 13, 1936.
13 PA-2, p. 10.
at Manila. This delay was due to the use of the S-42-B on the South Pacific survey flight in March and April of 1937. After the survey was completed, it was dispatched to Manila, named the Hong Kong Clipper, and began to fly the contracted, weekly shuttle service between Manila and Hong Kong. The commercial air service to China was inaugurated on April 21, 1937, with the departure of the China Clipper on a regular flight from Alameda. In the meantime, the Hong Kong Clipper, having arrived at Manila on April 22, made a final test hop over the proposed route. The final link was forged on April 28, 1937, when the "clipper" arrived at Hong Kong on her first regular flight, making a round-the-world air service possible for the first time. Although direct contact with Chinese cities had been established through the connection with CNAC at Hong Kong, the Hong Kong-Shanghai service was ruptured in 1937 by the Sino-Japanese War, thus making it impossible to maintain the direct connections with Shanghai that had been sought since 1933.

Announcement was made that, effective December 1, 1937, through traffic from San Francisco to Hong Kong, without the change of aircraft at Manila, would be inaugurated. With the increased experience with the M-130's, Pan American was able in 1936-1937 to improve the performance of the aircraft and operate a through service, on a 14-day turnaround, using the Martins exclusively. This eliminated the necessity of using the Sikorsky on the Hong Kong-Manila shuttle. Moreover,
the **Hong Kong Clipper** was needed in order to meet contractual engagements on the South Pacific route to Auckland.

The scheduled through trips proved to be sound. However, on July 29, 1938, Manila time, the **Hawaii Clipper** was lost on a routine flight between Guam and Manila, carrying six passengers and a crew of nine to their death. No trace of the seaplane was ever found, nor could any reason be discovered for the accident. The last radio contact with the "clipper" was a routine position report to Manila. Seconds after receipt of this message, radio Manila attempted to contact the seaplane, but to no avail.  

Immediately the Army and Navy dispatched ships and planes to search for the downed craft. The only probable trace of the "clipper" was found on July 31, by the United States Army Transport *Meigs*, which located a fifteen-hundred-foot slick containing oil and gasoline fifty miles southwest of the last reported position of the plane. Added to the earlier loss of the **Samoan Clipper**, the loss of the **Hawaii Clipper** caused a serious curtailment of Pan American's Pacific service. This resulted in a reduction of the frequency of schedules, as there were only two Martin M-130s left available to service the entire Pacific Division.

15 The last message was, "On regular course 300 miles off Samar, 565 miles out of Manila, altitude 9,200 feet, undercast clouds below, overcast above. Air moderately rough. Rain. Making good course and normal speed." There were no reports indicating any trouble whatsoever. *New York Times*, July 30, 1938.
During 1935, before the transpacific air mail schedules were inaugurated, Pan American had realized that to conduct a profitable and efficient transoceanic route over the Pacific, a much larger seaplane would be needed. An inordinate portion of the M-130's useful load had to be reserved for fuel, especially over the long Honolulu-San Francisco sector. The maximum passenger load on this sector was eight, and often this had to be cut due to weather factors. On other sectors the M-130 could carry up to 24 passengers. Accordingly, specifications for a larger aircraft were prepared, and manufacturers were invited to submit designs and bids on such a craft.

The Boeing Aircraft Company responded with the most acceptable bid and signed a $3,000,000 contract with Pan American on July 21, 1936, for the construction of six flying boats, designated as the B-314. The dates of delivery were to be: (1) December 21, 1937, (2) February 21, 1938, (3) April 21, 1938, (4) June 21, 1938, (5) August 21, 1938, and (6) October 21, 1938.

In a supplemental agreement, January 20, 1937, the delivery dates were extended for three months, but the first B-314, one of the three destined for the Pacific Division,

16 The Glenn L. Martin Company, builders of the M-130, did not submit bids because they felt that Pan American had not treated them right. The Martin Company claimed they had lost $850,000 on the construction of the three M-130 "clippers." Fortune, XV (June, 1938), 167.
was not received by Pan American until January 27, 1939. The second was delivered in March and the third in June of the same year. The other three "clippers" were assigned to the Atlantic Division. 17

The first public appearance of the new plane was on May 31, 1938, when it was launched at the Boeing factory in Seattle, Washington. Its initial showing was eagerly awaited by those interested in aviation, inasmuch as Pan American had announced as early as October 1936 that it had contracted for the new flying boats. 18 Actual flight tests were not begun until June 7. Finally, on January 26, 1938, after five months of testing, the Civil Aeronautics Authority (CAA) passed on the B-314's airworthiness for commercial service, and on the 29th Boeing turned the huge seaplane over to Pan American.

The B-314 included many innovations that had been developed by Pan American specialists in conjunction with the Boeing engineers. From the standpoint of crew operations and passenger comfort, Boeing achieved an over-all efficiency in the design of the B-314 that overshadowed all previous aircraft of this type. Perhaps one of the most notable improvements was the accessibility of the rear portion of the engine and the nacelle so that mechanical difficulties could be corrected in flight.

17 PA-2, p. 25ff.
A comparison of the characteristics between the B-314 and the M-130 will show the scope of advances made by Pan American and Boeing engineers.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>B-314</th>
<th>M-130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>84,000 pounds</td>
<td>52,000 pounds</td>
</tr>
<tr>
<td>Span</td>
<td>152 feet</td>
<td>130 feet</td>
</tr>
<tr>
<td>Height</td>
<td>27 ft., 6 7/8 in.</td>
<td>24 feet</td>
</tr>
<tr>
<td>Length</td>
<td>106 feet</td>
<td>90 feet, 7 inches</td>
</tr>
<tr>
<td>Wing Area</td>
<td>2,867 square feet</td>
<td>2,170 square feet</td>
</tr>
<tr>
<td>Engine</td>
<td>4 Wright &quot;Cyclones&quot; 1,600 BHP</td>
<td>4 Pratt &amp; Whitney 900 BHP</td>
</tr>
<tr>
<td>Passenger Capacity</td>
<td>74</td>
<td>41</td>
</tr>
<tr>
<td>Fuel Capacity</td>
<td>4,200 gallons</td>
<td>4,077 gallons</td>
</tr>
<tr>
<td>Payload for 1,000 nautical miles</td>
<td>21,000 pounds</td>
<td>12,000 pounds</td>
</tr>
<tr>
<td>Payload for 1,750 nautical miles</td>
<td>15,000 pounds</td>
<td>8,000 pounds</td>
</tr>
<tr>
<td>Payload for 2,500 nautical miles</td>
<td>9,000 pounds</td>
<td>4,000 pounds</td>
</tr>
</tbody>
</table>

The first Pacific Boeing flight left for Honolulu on February 22, 1939, carrying a crew of twelve and eleven passengers, which included four representatives of the CAA, two representatives of the Curtiss-Wright Corporation, two from Boeing, and three Pan American officials. Regular commercial passenger service was instituted on March 29, 1939, the California Clipper making the long San Francisco-Honolulu trip carrying a crew of eleven and 25 passengers, breaking the bottleneck created by the low passenger capacity of the M-130.
With the acquisition of the new Boeings the scheduled frequency was again stepped up to one round trip per week, the pace which Pan American had been unable to maintain after the Hawaii Clipper was lost. Operations were not simplified, however, by the acquisition of these new planes. The two remaining Martins had been pushed to the limit in order to fly to Hong Kong. Maintenance was limited to guaranteeing immediate safe operation, thus causing a greatly increased over-all rate of depreciation than was allowed for by usual maintenance.

The new Boeings had developed problems usual to new aircraft. The plane and the engines required modifications and adjustments, so that the pressure of maintaining the weekly schedule utilizing the four aircraft was not slackened until June 1940.

To provide for a more accessible and centrally located base in the San Francisco area, Pan American, early in 1938, negotiated a lease for part of the artificial Treasure Island, located in the Bay midway between San Francisco and Oakland and easily accessible by automobile via the Bay Bridge. The lease, signed August 24, 1938, was for 20 years, annual rent for the first five years was $1,000; $5,000 for the next five years, and $10,000 a year thereafter. In addition, Pan American was committed to an extensive building program of hangars and shops.19

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The base was opened in January 1939. In March of that year, at the request of Pan American, the District Engineer at San Francisco was asked to designate an area in the Bay to be reserved for the purpose of air navigation, as authorized under the Rivers and Harbors Act. Public hearings were held in December 1939 and all objections were satisfactorily met. On February 5, 1940, the Secretary of War set aside 2,000 acres of water adjacent to Treasure Island for the exclusive use of transoceanic seaplane operators. Marking of the channels was done under the auspices of the United States Coast Guard, Bureau of Lighthouses, Bureau of Marine Inspection, and the Civil Aeronautics Authority.

In the contract with Boeing, Pan American had secured an option to purchase additional B-314s, which option had to be exercised by October 1, 1939. However, several major problems had to be considered before making this decision. Pan American had been delving for some time into the possibility of using landplanes for oceanic flying, and it now appeared that such plans would be practical. Nonetheless, successful development of land craft for commercial operations appeared to be remote enough that deliveries could not be reasonably expected at an early date. In addition, the financial burden of over $5,000,000 for the new Boeings,

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20 Civil Aeronautics Journal, February 15, 1940.
viewed in the face of the disastrous financial results of the Pacific operation, gave serious cause for hesitation. Fortunately, the financial situation was eased somewhat by the decision of the CAA in the First Pacific Rate Case on September 12, 1939, when the mail pay was raised considerably. Accordingly, the option was exercised on September 29, 1939, for the acquisition of six more Boeings.

The new Boeing, designated as B-314A, was an improved version of the B-314. Among the major improvements were:

1. An increase of gross take-off weight from 82,500 to 84,000 pounds.
2. An increase in the take-off engine horsepower.
3. An increase of the fuel capacity from 4,200 to 5,448 gallons.
4. A decrease in oil capacity, thereby gaining additional cabin weight.
5. Improved propellers which increased efficiency of operations.

The cost of these new planes was approximately $800,000 each, about $131,000 more than the older B-314s. Scheduled delivery dates were: (1) April 20, 1941, (2) June 20, 1941, (3) August 20, 1941, (4) October 20, 1941, (5) December 20, 1941, and (6) January 20, 1942.

The new ships were to be assigned to the Atlantic Division. The six older B-314s were to be concentrated in the Pacific, thus enabling Pan American to retire the aging

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21 See below, p. 162.
Martins. Unfortunately, this program was not realized, for the European War in 1939 upset Pan American’s plans for extended service. On August 29, 1940, the company, with the consent and approval of the United States Government, agreed to sell to the British Purchasing Commission three of the new aircraft. The sale was made because Great Britain needed rapid communication with her overseas possessions and the United States, and she had no aircraft that approached the operational efficiency of the Boeing B-314A. News of the sale was made public by the British Purchasing Commission on December 31, 1940, following a report published by the Baltimore Sun on December 30.

As World War II progressed in the European theater, the demands upon Pan American’s Pacific service increased inordinately, but until the delivery of the B-314As there could be no solution to the problem, with only two Martins and three Boeings available to the entire Pacific Division. With the entry of Italy into the war, and the fall of France the route to the Pacific via the Mediterranean Sea was denied to the Allied Powers. All this traffic was now diverted to Pan American’s already overtaxed Pacific service.

The Central Pacific service at this time consisted of weekly trips performed alternately by the two Boeings and

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22 PA-2, pp. 29ff.
the two Martin aircraft, maintaining a turn-around cycle of fourteen days. This fleet of four aircraft did not allow for much protection should any serious mechanical defects occur. By now the Martin M-130s, increasingly overtaxed since the loss of the Hawaii Clipper, were requiring much more than the normal amount of maintenance to meet the minimal safety standards and operational efficiency required by the CAA and Pan American. In addition, small operational difficulties with the Boeing were still being encountered.

The newly reopened South Pacific run was flown by the B-314s on a fortnightly schedule, allowing for a turn-around cycle of eleven days. Various expedients were considered to increase the Pacific Division service; however, none of them were of a practicable nature.

The growing tension in the Far East gave rise to a need for increased contacts between the United States and the Southwestern Pacific. Japanese depredations in South China increased the importance of Singapore, at the foot of the Malay Peninsula, while, at the same time, they reduced the value of Hong Kong as an international terminus. Japanese occupation of the ports of Indo-China in the autumn of 1940, and complete domination there by March 1941 caused a severance of direct air connections between the two British colonies.

As a result Pan American applied to the Civil Aeronautics Board for permission to extend its service to
include Singapore as an additional terminal on its Central Pacific route. The request was made on November 15, 1940, approved on February 15, 1941, and the final affirmative action was taken by the President on April 29, 1941. This request was approved because of the increased business with the Indonesian world and the growing importance of Singapore as a commercial outlet.

Service was inaugurated on May 2, 1941, with the regular departure from San Francisco. The "clipper" arrived on May 10 at Singapore, establishing the new service. This service was to alternate each week with Hong Kong as the terminus of the route. At this time no aircraft were available to establish a projected Manila-Hong Kong-Singapore route.

24 Under the provisions of the Reorganization Act of 1939 the major functions for the control and regulation of civil aeronautics was transferred from the CAA to the Civil Aeronautics Board, effective June 30, 1940. The new plan placed civil aeronautics under the Office of the Administrator of the Civil Aeronautics Authority, Department of Commerce. The CAB, although within the framework of the Department of Commerce, exercised its work completely independently of the Secretary of Commerce. The Board continued the work of the Authority as an independent rule-making and adjudicative agency with broad powers over aeronautical, economical, and safety matters. The remaining powers were passed over to the Civil Aeronautics Administration and the Department of Commerce. Civil Aeronautics Journal, July 15, 1940.

25 Civil Aeronautics Board, Decisions of the Civil Aeronautics Board (Washington, D.C., 1943), II, 661-65. Hereafter cited as CAB-II.

26 On the first flight 570 pounds of mail, including 13,800 first-flight covers, were carried, but no passengers.
shuttle. In the fall of 1941, Pan American, in line with an agreement with the New Zealand Government, included Suva, Fiji, as a regular port of call on the South Pacific run.  

As 1941 wore on, mail, passenger, and cargo loads increased, due to the rising tempo of essential defense projects in the Pacific. It was decided to start a shuttle service on the California-Hawaii sector so as to accommodate the greatly increased traffic load there. With the delivery of the three new B-314A aircraft it became possible to handle all passenger applicants, which had not been the case previously. In August 1941 the service started with three weekly trips. The shuttle schedule consisted of one flight operating directly between Los Angeles and Honolulu, one in the same week from San Francisco through Los Angeles to Honolulu and a third on alternate weeks from San Francisco direct to the Hawaiian Islands. The regularly scheduled weekly through flights complemented this schedule, thus giving Hawaii three flights per week from the mainland.

Unfortunately, the demands of national defense caused the cessation of this service. Growing traffic in the Atlantic Division and increased activities by Pan American in the South Atlantic, occasioned by the European War of 1939-1941, caused Pan American to withdraw one of the new Boeings from the Pacific and sell it to the United States.

27 See above, p. 121.
Government in September 1941. As a result the company was unable to maintain the schedule and discontinued it on December 3, 1941.

The acquisition of the new Boeings by the Pacific Division did not increase the number of aircraft in operation during 1939-1941. As the new craft were received, the older Boeings were retired for approximately two months for modernization.  

In order to mitigate the effect of the loss of the Boeing sold to the United States Government — although it was replaced by one of the older Boeings from the Atlantic Division — it was decided to forward two S-42-B aircraft to operate a shuttle service between Manila-Hong Kong-Singapore allowing the larger "clippers" to turn around at Manila in order to decrease the elapsed time on the long transpacific hop from San Francisco to Manila.

Arrangements were made whereby the United States Government would pay the costs of ferrying and setting up the Sikorsky aircraft at Manila. It was planned to have these smaller planes furnish connecting service between the Asiatic mainland and Manila in addition to a weekly local service between these points. Actually only one of the S-42-B seaplanes was put into service, flying two trips per week between Manila, Macao, and Hong Kong, while the weekly

28 See Appendix C, "History of Aircraft, Pacific Division."
flight from the United States continued on to Singapore. This schedule became effective in October 1941.

When the Japanese struck at Pearl Harbor, Pan American was not unprepared, for they had considered such an eventuality and had predetermined codes to warn the Pacific Division in case of hostilities. Ten minutes after the attack all stations and aircraft in the Pacific Division had been informed. The signal, "Case 7, Condition A" warned the Hawaii bound Anzac Clipper, one hour out of Honolulu, to land at the alternate base at Hilo, Hawaii. Subsequently, on the same evening she returned to San Francisco without incident. In the Central Pacific, the Philippine Clipper, ten minutes out of Wake heading for Guam when warned, returned to Wake. There it was being readied to make a long range patrol at the request of the Navy, when the Japanese struck, heavily damaging ground facilities, but inflicting only light damage to the "clipper," despite strafing attacks. The "clipper" departed the same day for Midway, evacuating all company personnel, except one, and arrived safely at San Francisco on December 10. The Pacific Clipper, enroute from Noumea to Auckland, in its escape from the Pacific war zone, established a series of records for a commercial type aircraft. As Pan American decided that the normal return route to Honolulu would endanger the aircraft, the "clipper" was sent on a 31,500 mile trip to New York City, establishing the following records:
(1) The first round-the-world flight by a commercial plane.

(2) The first Pan American crossing between Noumea and Australia.

(3) The longest continuous trip made by a commercial plane.

(4) The first round-the-world flight following a route near the equator.

The Hong Kong Clipper, an S-42-B, that had been recently sent to establish the Manila-Hong Kong shuttle, was destroyed by the Japanese as it lay tied to the dock at Hong Kong. The crew was able to escape aboard a CNAC aircraft into unoccupied China. 29

After the first few hours of hostilities Pan American had lost all but the San Francisco-Honolulu sector of its transpacific routes. On the advice of military authorities all stations in the Pacific were evacuated whenever possible. Within half an hour of the first reports of the Japanese attack, all news concerning Pacific flights were withheld. The semi-official status that Pan American held became readily apparent with the announcement that all further information concerning the air line would have to be cleared by the Navy and State Departments. 30 Losses in aircraft, equipment and facilities were estimated to be $910,849, much of which was sustained during the initial attacks of the Japanese.

29 PA-2, pp. 43-45.

Pan American's successes in the Pacific did not cease, however, with the initiation of hostilities. By the close of 1942 the company had given aid and assistance to the Armed Forces in the Pacific in three areas; trained personnel, experience, and equipment. The story of the activities of America's commercial aviation companies allied with the Air Transport Command and Naval Air Transport Service in the Pacific is a field of study in itself and will not be considered here.

Despite the fact that Pacific air commerce was developed by seaplanes, Pan American had long been interested in the development of large four-engine land aircraft for transoceanic flight. This type of aircraft had the advantages of increased efficiency in cabin space and greater speed. In 1936 the Air Transportation Association of America, consisting of Pan American, United Air Lines, Trans-Continental and Western, American Airlines, and Eastern Airlines, was organized to achieve greater cooperation among the members. Among their objectives were to gain co-ordination in scheduling, credit, advertising, to command an increase in buying power, and to aid in the interchange of engineering data. Out of this came a

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contract with Douglas Aircraft Company to develop a four-engine land plane on a shared-expense basis. This plane, when finally proved, was the famed DC-4, that firmly established oceanic land plane operations. The development of this plane took more time than planned, as it did not quite meet the specifications that Pan American desired during its early development; so Pan American sought other contracts for a more efficient type of aircraft.

As a result of the above quest Pan American became the first air line to order a four-engine land plane with pressurized cabin for high altitude flight. This was the Boeing S-307, which was ordered on March 15, 1937. The S-307 was developed from earlier Boeing experience with the YB-17, the prototype of the "Flying Fortress" of World War II fame. Nicknamed the "Stratoliner," the S-307 came into its own share of production difficulties, one having crashed in test flight during March 1939. Therefore, the first was not delivered to Pan American until the spring of 1940. While these aircraft were developed with the idea of using them in transoceanic operations, none of them were used in such flights prior to World War II.

Pursuing plans for an adequate transoceanic land planes, Pan American, on December 9, 1937, issued invitations to eight of the leading aircraft manufacturers, requesting bids on a proposed plane with the following specifications:

(1) Stateroom accommodations for 100 passengers
(2) Kitchen and dining room accommodations
A range of 5,000 miles
Speed of 200 miles per hour
A gross payload of 25,000 pounds

Five of the eight companies solicited returned preliminary bids and sketches, however these specifications proved to be too advanced, and the bids were found unsatisfactory. 32

Continuing its search for an adequate four-engined aircraft, Pan American signed a contract in November 1939 with Lockheed Aircraft Corporation for an L-44 type aircraft. Again, on June 10, 1940, manufacturers were requested to submit designs for an aircraft "which would have a payload . . . not less than 17,500 pounds . . . capable of flying 5,000 statute miles in still air . . . between sea level and 25,000 feet." Included would be accommodations for 50 passengers and a crew of twelve. A $50,000 payment was offered to the concern submitting the best and most satisfactory proposal for such a craft, including a guaranteed performance at or above the specifications as outlined by Pan American. Although no specifications were made as to the type, it was assumed that they would be land planes. These craft were destined to be used on the Atlantic route and on the Honolulu-San Francisco sector.

At this time it was impossible to fly landplanes beyond Honolulu because of the lack of suitable landing fields; however, because of anticipated military requirements, development of such fields was considered probable in the foreseeable future.

32 See above, p. 42.
Discussion with manufacturers had reached such a stage that by March 1940 Pan American announced that plans had been formulated to begin daily California-Hawaii flights from San Francisco and Los Angeles, in addition to through flights beyond Honolulu. Equipment to be used included the new B-314As, to be delivered early in 1941, and, ultimately, the landplanes. This service might be conducted by Pan American or a joint company as agreed upon by Pan American, Matson Navigation Company, and Inter-Island Steamship Navigation Company in 1935. Part of the agreement provided that at any time Matson and Inter-Island might demand that local business between California and Hawaii be segregated into a joint company, half owned by Pan American, half owned by Matson and Inter-Island. On June 20, 1940, Inter-Island and Matson had given notice to the Civil Aeronautics Board of their intention to form a company to operate such a service. The request, however, was disapproved by the Board on July 29, 1942. 33

On June 11, 1940, Pan American entered into a contract with Lockheed Aircraft Corporation for thirty four-engine "Constellation"-type aircraft, ten of which were to be the short-range L-49 type, and twenty the long-range L-149 type, which had been specifically designed for Pan American. In an option signed on December 3, 1940,

33 CAB-III, pp. 543-544.
the original order was increased to forty aircraft, twenty-two L-49s and eighteen L-149s, delivery to commence in June 1942. Both aircraft were basically the same design, but the L-149 was modified to permit it to make long over-water flights.

Eleven of the L-149 Constellations, under plans formulated in October 1940, were assigned to the Pacific Division to replace all other equipment in the area. Two daily schedules were planned between California and Hawaii, and a twice-weekly service between California and Hong Kong and to the Antipodes.

The growing threat of United States military involvement in the European conflict prevented the realization of the plans for the Constellations, because manufacturers had to defer work in favor of urgent military requirements. Therefore, Pan American again turned to Douglas Aircraft (who, by now, had the DC-4 undergoing test flights), and ordered nineteen DC-4s on an option they had on a contract, dated April 24, 1940, for three of these aircraft for use in South America. Had the war not interfered, the DC-4s would have been used on the ocean routes until the delivery of the longer range Constellations.34

In the period from 1936 to 1941 many technical improvements were made in the Pacific sector. Among these

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34 PA-2, pp. 30-31, 42.
was the development of more efficient aircraft as well as new types of aircraft. A scientific control of flight methodology was worked out whereby the "most efficient performance of the aircraft is charted through the most favorable conditions available to that flight." A reduction in fuel reserve requirements was continuous throughout the years of operating across the Pacific. This came about through experience in ordinary operations and from improved weather forecasting. Another reduction of fuel reserve was effected by using the Port of Hilo, Hawaii, as the theoretical terminus on west bound flights, so that normal fuel loads, plus reserve, were 1,904 pounds lighter than that required for Honolulu. When the aircraft reached a pre-arranged point, on a basis of a new weather forecast and report of available fuel, the "clipper" would be released to continue to Honolulu, instead of stopping at Hilo. The same procedure was used on flights heading for the California coast. Following a similar procedure eastbound flights were scheduled to Los Angeles and subsequently released to San Francisco. Numerous other improvements in maintenance were developed: a reduction of time on engine changes, increased hours of engine operation before an overhaul was necessary, and greater knowledge of internal combustion in aircraft engines which led to many other improvements.

35 Ibid., p. 31.
Pan American pioneered in Pacific meteorology. Prior to their flights in the Pacific there was little or no information concerning the entire region. Surface vessels had very little reason to collect upper air data, and in many regions flown by the "clippers" there was very little shipping. With the co-operation of the United States Weather Bureau and the Navy, it was possible to get more frequent daily reports and to work out a system for exchange of weather data throughout the Pacific. As communications in the Philippines had proved to be unreliable, Pan American found it necessary to establish its own network of five radio stations there in order to provide an adequate coverage of the area, so that weather data and navigational aid would be available at all times.

Pan American was instrumental in organizing a series of conferences to standardize methods of reporting and other meteorological matters in the Pacific. The first meeting was held in Manila in September 1936. Attending were representatives of the United States Navy, the Weather Bureau, the Manila Observatory, and Pan American. The conference resulted in an agreement whereby Globe Wireless and the Radio Corporation of America agreed to handle reports, free of charge, in the Western Pacific. A Navy communications net was established for the exchange of reports between Manila, Honolulu, and San Francisco. A second conference was held at Hong Kong, January 13, 1937, attended by representatives of China, the Philippines,
the Crown Colony of Hong Kong, Indo-China, Siam, the Netherlands East Indies, the United States Navy, and Pan American, which resulted in a more standardized and improved exchange of weather data. Forecasting by Pan American had been perfected to the point where typhoon paths could be accurately predicted, thus enabling flights to avoid serious danger areas as they occurred.

The communications system throughout the entire Pacific area was expanded and improved so that it could sustain the progressive expansion of the weather forecasting service and perform its essential role in aircraft operation and navigation. Of special note was the increase in the range of the direction-finding apparatus.

As Pan American maintained the only air bases spanning the North and South Pacific prior to World War II, its facilities were used by military fliers of the United States and of other nations. As the international situation degenerated in the Pacific, air activity greatly increased. Military aircraft, purchased by the British and Dutch Governments in the United States, were ferried across the Pacific by Consairways, using Pan American facilities. Services performed by Pan American personnel included radio and meteorological aid, hotel and meal accommodations, and aircraft maintenance and servicing. Similar service was also rendered to the Australian Qantas Airlines and Canadian

36 Ibid., p. 37.
Pacific in ferry operations from the United States to Australia.

In addition, Pan American rendered invaluable aid to United States Naval aviation at Midway Island. Prior to the Japanese attack there were no adequate naval facilities on the island. Naval patrol flights to and from Midway were serviced by Pan American personnel, and hotel and mess facilities were made available to the crews. Military flights across the Pacific to the Philippines were also accorded complete use of the stations and communications facilities in the long flight across the Pacific.

In spite of the increasing need for rapid communication between Australia and the United States, permission for Pan American to operate directly into Australia from Noumea or New Zealand was not granted until after the war had reached the Pacific. In the summer of 1941 the Australian Government publicly abandoned its stand of opposing a United States connecting service and began actively to seek a new approach so that the transpacific service could be extended into Australia. 37 Increasing air traffic had jammed the existing services to and through Australia so that additional service was a necessity. Passengers debarking from the flight at Auckland often had to wait a month or more for transportation to Australia. The traffic load was further increased because the Central Pacific route

to the Orient was booked months ahead, and many attempted to reach the Orient by flying to New Zealand and proceeding from there via Australian, British, or Dutch air lines to the Asiatic mainland. Unfortunately, the negotiations for Pan American flights into Australia floundered. Australia asked for rights to land at Hawaii en route to Canada as a condition of their granting rights in Australia. However, as Pan American did not have the power to grant such rights and seemed reluctant to press the issue in Washington, nothing further was accomplished until after the war spread to the South Pacific.

As Pan American's operations came to assume a more military character so did the island bases that the air line had pioneered. The occupation, settlement, and construction of these bases across the Pacific, to service the air line, were recognized as factors in the military picture of the Pacific even before actual operations assumed such a nature.

Fortifications or other construction of military nature was prohibited by virtue of a series of treaties signed by the leading Pacific powers at the Washington Conference in 1922, whereby the signatories had obligated themselves not to fortify their Pacific island possessions.

38 Ibid., September 19, 1941.

But on December 29, 1934, the Japanese Ambassador gave notice to the United States Secretary of State that his government intended to terminate the treaty "which will accordingly cease to be in force after the 31st of December, 1936." Thereafter construction of a direct military nature could be commenced or overt aid given in improving the existing facilities that had been laboriously constructed by Pan American. The islands specifically involved were Canton, Midway, Wake, and Guam. Intention of fortifying these islands was announced by the Secretary of the Navy in July 1935, although construction was delayed until much later. 41

After the lapse of the Washington Treaties, plans were formulated in 1936 to provide Federal funds to improve the facilities at Midway by enlarging the seaplane landing basin and facilities at Wells Harbor. It was stressed that such a project was primarily a commercial proposition to speed the development of Pan American's base there and that the Navy was only interested in "any activity which may have a potential wartime value." 42 It was not until 1938 that work on the project actually commenced. Navy funds of

40 United States Department of State, Papers Relating to the Foreign Relations of the United States and Japan, I, 274.
$1,100,000 were turned over to the Army Engineers for harbor and channel improvements. It was planned to dredge a 30-foot-deep channel through the southern reef to the deep water inside the lagoon, ending in a harbor basin 1,200 feet square with a minimum depth of eight feet to be protected by suitable breakwaters. This project was completed in 1940. On March 27, 1940, Contractors, Pacific Naval Air Bases began an extensive project of improving the existing facilities that had been built by the Army Engineers.

Federal construction was planned for Wake at the same time plans for Midway were being formulated, but actual construction did not commence until January 1941. Surveys for proposed harbor improvements were conducted by the Army Engineers in 1936 and again in 1940, when actual planning was initiated. A pier, a channel through the reef, and a turning basin large enough to accommodate a large tanker were projected; although little had been accomplished when Wake Island was seized by the Japanese.

The island of Guam had long been considered as a possible mid-Pacific fortress to aid in the defense of the Hawaiian Islands and the West Coast of the United States, although very little work had been done because of the fear

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44 Ibid., pp. 157-58.
of offending Japan and because of Washington Treaty limitations. Appropriations for improvements at Guam had been asked for by the Navy, but no money was granted. On March 6, 1939, Juan T. Trippe, President of Pan American, testified before the Senate Naval Affairs Committee in favor of the project saying that the harbor at Guam was dangerous for the operation of commercial planes. Actual construction did not begin until May 1941 when five oil storage tanks were built. Roads were improved, and construction of a breakwater was started in August 1941. Work had scarcely begun when the Japanese seized the island.

Canton Island had been recommended for an appropriation to improve its facilities in the Hepburn Report of 1938 and continuously thereafter. No actual work was begun until 1942, when the base was reopened to service military operations.

As Pan American's stature grew in the commercial and military situation in the Pacific, there was a marked contrast between the technical, social, and political progress that took place in the development of the Pacific route and the financial results of the operation. Mail pay and passenger revenue were not enough to meet the financial drain that was incurred by the transpacific operation.

46 United States Navy, op. cit., p. 344.
The nature of the costs of running an air line varied with the type of operation conducted, the terrain flown over, the type of aircraft operated, and a host of factors that varied widely from air line to air line.

Capital costs were rather standard items which included interest on a funded debt, bank loans, purchase of equipment, building of air bases and like expenses. Operating expenses included cost of aircraft, operation of aircraft, maintenance and depreciation of the flight equipment, ground and indirect expenses, including selling, general, and administrative costs. Constant costs included such things as investments in the right of way, point-to-point navigational aids and radio equipment, station personnel, and so forth. Included in these constant costs were aircraft operational expenses such as fuel, wages of crew, and items relating to passenger comfort. Direct maintenance and depreciation of the aircraft varied with the number of flights; however, they tended to be constant per airplane mile flown.\(^47\)

The Foreign Air Mail Act of 1928 had specified a maximum subsidy rate of $2.00 per mile flown. This rate had been established in a period when transoceanic flight, as such, had not been anticipated, and short routes between the United States and Latin America were the only criteria.

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This rate, adequate for South American services, was woefully insufficient for defraying the expenses occurred in the Pacific.  

Each of the Martin M-130 aircraft and the Boeing seaplanes engaged in Pacific flying represented an investment many times the cost of the equipment used in South America. The S-42, used in Latin America, averaged $210,201.60 per unit; the Boeing 314 averaged $668,908 and the B-314A cost $800,000; contrasted with these prices was the standard DC-3, used throughout the world, at $115,000 per unit.  

The long flight from San Francisco to Honolulu, the sector which had the greatest revenue potential, was the one on which the fewest passengers could be carried. At times the M-130’s passenger capacity was as low as two passengers, a situation which often led to refusals or cancellations of transportation. Weather, operational difficulties inherent in the aging Martins, plus unsolved mechanical problems in the Boeings, also cut the efficiency of the sector. Aircraft to increase this service were never available, although a shuttle service was initiated in order

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48 See Appendix D - "Operating Losses."

49 PA-2, pp. 4, 27, 30, 37.

50 The passenger cabin load was limited due to the large amounts of fuel that had to be carried. Often last minute weather forecasts necessitated the off-loading of passengers to accommodate increased fuel reserves.
to increase traffic shortly before the entry of the United States into World War II. Neither type of aircraft had a cabin load large enough so that it could profitably carry enough passengers without another source of income.

Large investments had been made in the construction of bases and the additional facilities necessary to house and feed the operational staff and passengers. Yet under the terms of the air mail contract they could only be utilized on one round trip per week. United States domestic air lines enjoyed the use of municipal airfields and of government-maintained airways, meteorological and radio facilities. All of these things Pan American, outside the continental United States, had to construct and maintain, thereby creating an additional drain upon the financial structure of the system which was not encountered by the majority of American carriers.

Additional personnel were required on the islands to maintain such utilities as power, light, sewage, transportation, and food storage which were usually furnished at a nominal fee to the air lines on the mainland. Due to the isolation of the bases, transportation and handling expenses multiplied the cost of fuel, equipment, and other items. Special ships had to be chartered, as the bases were off the normal trade routes, and handling at the islands was complicated by the lack of adequate port facilities.
Personnel problems were discovered that were not typical of standard airline operations. It was necessary to provide subsistence and arrange for special furloughs in recognition of the isolated life and limited recreational and social facilities at each station.

When the Civil Aeronautics Act was passed in 1938, the Pacific Division was constituting a serious drain upon the entire Pan American Airways System. Accordingly, Pan American filed a petition under the new law, requesting an increase in the mail pay for the division. During this hearing considerable testimony was introduced to show the importance of the Pacific route from the standpoint of commerce, postal service, and national defense. However, due to Japan's activities in the Far East from 1937, through traffic to the Orient had been curtailed. At the time of the petition serious consideration was being given to the advisability of discontinuing flights west and south of Honolulu because of the low return from these sectors. However, the Civil Aeronautics Authority deemed the service necessary and on September 12, 1939, increased the rate of mail pay to $3.35 per mile, retroactive to April 1, 1939.51

The costs of the transpacific operation in 1939 were figured to be $3.93 per mile flown, so that the mail pay increase

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51 PA-2, pp. 38-39.
almost paid for the flight costs. 52

Mail pay was not kept at a constant figure, but varied as the Civil Aeronautics Authority -- later the Civil Aeronautics Board -- determined the bases of a fair return. For example, when the South Pacific route was opened in 1940, a rate of $3.11 per airplane statute mile was awarded. On November 1, 1940, the rate for both routes was reduced to $2.0021 per statute mile flown. 53

The financial difficulties of the Pacific Division were not to be relieved solely by adjustments made in the rate of return for carrying mail. Mail pay was not considered by the Board to be a means of financially supporting an air line, but rather as an interim method of support until the operation became self-sufficient. Revenue from passengers and cargo greatly increased in the period 1939-1941 because of the abnormal political and economic situation created by an expanding Japan and the dislocations caused by the European War. This increased traffic, along with an increase in mail pay, enabled Pan American to begin to liquidate past deficits and foresee an economically sound operation in the Pacific. Unfortunately, the improved financial condition was not the result of an orderly, normal commercial growth but rather caused by a breakdown


53 *CAB-III*, p. 697.
of the normal trade and diplomatic connections throughout the world.
CHAPTER VI

CONCLUSION

The postwar world, familiar with the aviation exploits of World War II, with the immense distances spanned in order to bomb enemy installations, with the development and building of aircraft without regard to cost, and with the creation of a vast world aviation system by the allied governments, is apt to forget the technical, physical, and financial barriers that faced those pioneers who sought to develop transoceanic air routes prior to 1941. Despite the risks inherent in the operation, the enterprise and technological ability exhibited by American corporations, and particularly by Pan American, in the transpacific area, demonstrated that the country had surpassed the then existing state of aviation enterprise exhibited by the balance of the world.

The Pacific basin, bordered by Alaska, the Pacific Coast of the United States, China, and Australia, with islands sprinkled throughout its vast ocean wastes, and in particular the strategically located Philippine, Marianas, and the Hawaiian Islands, offered an ideal geographical climate for the development of transoceanic aviation.

In American possessions in the Pacific local aviation interests by 1930 had developed routes peculiar to their own local conditions. In Alaska and the Philippines this development was characterized by the growth of several local
air lines, with one or two aircraft at the most, competing for a limited local market. China and the United States, where the air lines had a vast hinterland in which to expand, concentrated their energies in developing domestic air networks. In Hawaii, operations were inter-island and were characterized by short overwater flights of 150 miles or less, with little attention directed toward the development of long distance transoceanic flying.

At one time or another most operators dreamed of flying the Pacific, although they were not prepared technically or financially to conquer the world's largest ocean. It was during this period that Pan American laid the groundwork for oceanic flying in the Caribbean and was surveying the Pacific and Atlantic in order to determine the feasibility of such routes. Each of the local aviation interests in the Pacific had made contributions to the charting of the Pacific air track in the knowledge they had gained about local conditions and the surrounding area but each could supply little information beyond that. Thus the story of flying the Pacific has become principally the description of the operations of Pan American.

The inauguration of the first transoceanic service by Pan American in the Pacific was the culmination of almost a decade of experience, experimentation, and planning which began in 1927, the same year in which occurred two of the most notable exploits of aviation history; Charles A. Lindbergh's solo Atlantic crossing and the California flight
by Army Lieutenants Lester J. Maitland and Albert F. Hagenberger.

The initial successes of Pan American in the Pacific were due in a large measure to the experience that the company had gained in its operations over the Caribbean Sea. The techniques of transoceanic flight, the training of crews, the aircraft itself, radio equipment, and many other items were all developed and proved out in practice in that area. In 1934, with the delivery of the Sikorsky and Martin seaplanes, types which had been sought since 1931, Pan American was to forge the last link in the chain of technological development necessary to conduct commercial transoceanic flight over long distances.

The spanning of the Pacific in 1935 was one of the most remarkable developments in aviation history up to that time. Prior to the establishment of this service the longest regular overwater passenger flight in the world was a 600 mile service conducted by Pan American over the Caribbean. The Pacific air track presented problems of a much greater magnitude than those faced in the Caribbean. The 2,400 miles between California and Hawaii was four times longer than any oceanic passenger service ever flown. This immense increase in distance created new technical problems which involved all aspects of the operation. Some of the problems were the establishment of long range radio and meteorological facilities, new methods of navigation, safety and emergency equipment, provisions for a multiple flight crew, and
accommodations for passengers.

The extension of Pan American's service across the Pacific had opened a new era in world aviation. For the first time a commercial world-wide air service proved to be practicable; all the major nations of the world could be reached within a matter of hours, rather than days, as had been the case previously. The success of Pan American further stimulated interest in transoceanic international aviation and led to talks and conferences regarding the establishment of additional services. Unfortunately, the advent of World War II disrupted the majority of such plans. While Britain, France, the Netherlands, Germany, Japan, and Italy had been attempting to develop their own transoceanic services, they were unable to realize this goal on a commercial basis until after World War II.

Transpacific commerce from 1935-1941 could not profitably support the air line. Pan American's Pacific operation had to be assured of additional income in order to guarantee a reasonable return upon its investment. The Post Office Department, in frank recognition that transpacific aviation was unable to support itself, advanced mail contracts to the Pacific Division as a financial crutch. By law, mail pay was offered in order to help defray expenses, not to directly support an air line, although it came to assume the form of a direct subsidy in order to keep this vital service in operation. This was the pattern followed in the years before Japan struck Pearl Harbor.
It is improbable that the Pacific air track from 1935-1941 could have succeeded in becoming economically self-sufficient under normal conditions. The potential transpacific commerce, which had caused Pan American to consider flying to the Orient, had ceased to be a real factor in the maintenance of operations across the Pacific after 1937. In that year Japan renewed her aggression in China, causing a depression in the volume of Pacific trade. Moreover, as Japan gained more and more control over the trade complex of Asia, commerce was further depressed. As the relations between the United States and Japan steadily deteriorated, trade between these two countries continued to dwindle so that the criterion of a flourishing commerce as a justification for continued operation could not be applied to the transpacific air service. From 1940 the volume of traffic did increase so that the Pacific Division began to be economically solvent. This increase, however, was due to the dislocations caused by the European War in transportation between Europe and Asia as well as to the increased tempo of defense work throughout the Pacific.

It became increasingly apparent after the inauguration of the Pacific service, particularly after 1938, that the Pacific Division was more of an agency for the security and welfare of the United States than a commercial operation which relied upon an effective economic demand for such services. The continuation and expansion of the Pacific air routes was predicated upon national needs rather than
commercial requirements. The Post Office Department desired an air service in order to speed the transmission of essential mail by the most expeditious means possible. The State Department desired such a service so that its diplomats and other agents could more rapidly travel across the Pacific. The Departments of War and Navy were vitally interested in such a service in order to have a string of air bases built and maintained across the Pacific.

The relationship between commercial and military aviation development in the United States is not distinct because of the widely divergent goals of each service. Of course, many of the technical improvements in equipment and design were shared. Between 1918-1941 there was much conjecture as to the feasibility of using commercial aircraft as military vehicles in war. At that time far-flung aerial cargo operations had not been proved in practice and the value of commercial types of aircraft was seen in their usefulness in conversion to combat types of aircraft which never proved feasible.

Military and commercial development of aircraft did proceed along similar paths but soon diverged. The Army and the Navy sought more efficient fighter planes and bombers while the commercial operators sought aircraft specifically designed to carry mail, cargo, and passengers. Both groups demanded aircraft capable of flying farther and faster with greater pay loads from the aircraft manufacturers. Prototypes of the Boeing "Flying Fortress" led the Boeing engineers
to adapt the wing structure of the "Flying Fortress" to the successful seaplane ordered by Pan American, the B-314. Again models of the "Flying Fortress" were the basis upon which the first four-engine passenger landplane with a pressurized cabin, the S-307 was built. In addition military contracts in the 1930's aided many of the aircraft manufacturers to remain in business and thus afford to spend time and money in the development of commercial aircraft.

The search for a long range four-engine landplane by Pan American and other United States carriers in 1936 led to the development of the mainstays of military aerial cargo operations, the Lockheed Constellation and the Douglas DC-4, which were used throughout World War II.

In the years prior to December 7, 1941, the direct relationship between Pan American's Pacific service and the requirements of the Army and Navy became more and more apparent. The United States had obligated itself in signing the Washington Treaties of 1922 not to engage in new military or naval construction on its central Pacific islands beyond Hawaii. The Army and Navy felt that one way to avoid complete impairment of our defense there could be found in the advance of Pan American bases across the Pacific. The military significance of this step was promptly noted by Japanese authorities. After 1936 this subterfuge was no longer necessary, as the Japanese Empire abrogated the Treaty provisions and these restrictions no longer applied. Thereafter construction was openly urged by the Army and Navy
Departments but was delayed partly in an effort to placate the hypersensitive Japanese and partly through lack of funds. Again in 1940, when the question of curtailing Pan American's flights south and west of Honolulu arose in hearings before the Civil Aeronautics Board on the ground that they did not meet the criteria of "public convenience and necessity," as defined in the Civil Aeronautics Act, the Army and Navy convinced the Board that the route must be kept open. The Armed Services did not have the necessary funds to keep the bases operational, but a continuation of Pan American's flights would serve the same purpose.

The Army, Navy, and Coast Guard throughout the entire development of the Pacific service actively assisted the airline in the construction of bases, supply, and the transportation of personnel. Aerological stations and radio facilities were established in order to facilitate the aerial operations in the Pacific. Testimony of Army and Navy officers in Congressional Hearings clearly pointed out that if for no other reason transpacific aviation should be established in order to serve the military. In many cases detailed planning and actual construction for the advance of Pan American's Pacific service had preceded Federal authorization; apparently indicating that Pan American had been assured that approval would be forthcoming. This was the case in regard to such projects as the granting of mail contracts, the Line Island project, and the occupation of Canton Island.
In 1945 a House Committee investigating the United States international air services noted the close relationship that existed between the Federal Government and Pan American. The nature of international communication required government control and public aid which automatically placed the international carrier in the status of a "chosen instrument." In many instances the Congressional Committee noted that overseas operations were not justified on the grounds of a real economic demand but because of national interest and pride. They recommended that subsidies and other forms of public aid should be included in the budget of the military establishment because of the military nature of the operations. Their recommendations that these operations should be labeled as such was a policy that the Government was loath to adopt before 1941.

When Pan American was founded in 1927 there had been no thought apparently, that the nature of its operations would be other than purely commercial. As the company expanded and the unique services that international air lines could offer the nation became more and more apparent it became increasingly obvious that a definite relationship must be developed between the two. In its position as the "chosen instrument" of the United States Pan American could not help but enjoy the additional protection, aid, and assistance that such a relationship offered as its services were extended.

The contribution of United States commercial aviation, particularly Pan American, in the Pacific, to national
defense was immense. Many of the commercial carriers had established their own training programs which were expanded to include personnel as the crisis in the Pacific grew. Knowledge of routes and the composition of route manuals, which in many cases covered areas where Army or Navy aviators were unable to fly for political and diplomatic reasons, a reservoir of trained personnel in flight and ground operations, were all made available when needed. A large portion of the United States commercial carriers operated the vast aerial cargo and passenger services, the Air Transport Command and the Naval Air Transport Service, under contract to the Army or Navy. In the Pacific, Pan American, under charter to the Naval Air Transport Service, conducted a service of daily flights, using both Pan American and Navy seaplanes. Pan American's bases throughout the Pacific were reopened wherever practicable and new bases were established as the air service spread across the Pacific. In effect the United States commercial carriers taught the Armed Services how to conduct a transport air line.

The building of the transpacific air service between 1930-1941 introduced new problems on the international and diplomatic level. Prior to the expansion of Pan American into the Pacific, United States international services had been conducted within the continental land mass of the Western Hemisphere and operations had been left almost solely as a matter between the United States carriers and the nations north and south of the United States borders. The expansion
of Italian and German controlled air lines in Latin America, of course, was not looked upon with favor by our State Department which had often given covert support to the expansion of United States air lines in that area. Again the relationships on the American continent were governed by intra-American pacts -- agreements which the United States did not have with the Pacific nations -- and the varying applications of the Monroe Doctrine. As the United States air lines pushed beyond the nations of the Western Hemisphere new problems faced the international carrier. The United States for the first time was opposed by vigorous, state supported air lines, jealous of their "air-space" and demanding reciprocal rights. However these problems proved to be no real deterrent in the expansion across the Pacific.

The northern approach to the United States via Alaska and Canada was effectively blocked by the refusal of the Soviet Union to grant any rights to any foreign carriers in her Asiatic territories so there was no competition for the Great Circle route in the foreseeable future. The Hawaii Islands, the key to the approach to the United States via the southern or central Pacific, was restricted to the use of United States carriers. Actually any serious consideration by foreign carriers in seeking the use of Hawaii as an intermediate stopping point never arose as Pan American was the only carrier in the world at that time that had aircraft capable of conducting any effective service between Hawaii and the Pacific Coast. Moreover the refusal of a nation to
grant landing rights or deal with the air line on a unilateral basis often left that country without an air connection and forced the carrier to seek an alternate base. Ordinarily this led to a type of blackmail whereby rights would be granted in order to secure the needed air service. This was the case when Pan American sought landing rights at Hong Kong and were refused. Pan American then sought and gained a concession at the near-by Portuguese colony of Macao; whereupon the British relented and granted Pan American permission to land at Hong Kong in order to have a direct transpacific air connection.

Several aspects of the establishment of Pan American's Pacific service paralleled the development of steamship lines in the Pacific. The acquisition of bases and the restrictions placed upon foreign carriers were similar in both cases. Ample precedent for the protective legislation within the Civil Aeronautics Act of 1938 can be found in sections of the Merchant Marine Act. During 1937 there was Congressional agitation to place all United States international aviation under the control of the Merchant Marine Commission as those quarters could see no difference in the nature of their operations. It was argued that both the steamship and air lines were dependent upon subsidy, that they could not afford to build and maintain foreign commerce without aid, and that the needs of national defense could be better met by a unified control of the two modes of transportation. Although the air lines did retain their independence and were placed
under the Aeronautics Authority, the dependence of both upon mail pay and the essential national rather than commercial aspects of both services were strikingly similar.

Scattered across the central and south Pacific were several island groups that have been the center of diplomatic discussions, principally between Great Britain and the United States, upon at least three occasions in the past 100 years.

The first time these islands became the center of dispute was during the guano rush of the 1850's. The guano deposits on the island were primarily worked by British and United States nationals. Each nation then claimed sovereignty over the various guano islands by virtue of working the deposits thereon, in addition to discovery. However, as the deposits became exhausted the islands were abandoned by both nations as having no further consequence. Unfortunately many of these islands had been claimed by both nations, and little was done at that time to determine their status, a fact which led to difficulties in the future.

In the 1890's these Pacific islands were "rediscovered" when Great Britain and the United States were searching for way stations on which to anchor their trans-pacific submarine cables, again being "lost" as these questions were settled.

The islands next came into prominence during the exploration of the Pacific by air. When the plans of Pan American in the Pacific became public both the United States and Great Britain began to examine their claims to sovereignty
in order to secure a predominant position in the Pacific air world. As a result title to the various islands was firmly established, the United States gaining clear title to the Line Islands, Great Britain reasserting sovereignty over the Phoenix Group, with the exception of Canton Island which was placed under a British-United States condominium. This scramble for air bases resolved the problems of ownership of the islands although at the time the British were unable to utilize them as air bases. In addition, title to other islands in the Pacific was reaffirmed so that there would be no question as to sovereignty in the future. Such islands as Johnston (United States) and Fanning (Great Britain) and the establishment of a condominium over Christmas Island are cases in point.

The air age that was inaugurated in the Pacific by Pan American in 1935 was culminated by the Atomic Age in just one decade. Flights averaging eighteen to twenty hours across the long California to Hawaiian sector have given way to flights of six to eight hours duration. Pan American, who had operated an average of one to two flights per week between 1935-1941, was operating a schedule of four or five flights per day and in competition with a number of air lines flying the same schedules and often the same routes. Some of the islands in the Phoenix and Line Island Groups that the air age had brought into prominence in 1935 again became the focal point of the world when they became a part of the Atomic and Hydrogen tests. Transpacific aviation earned a
real place of distinction in the development of air travel in the past and appears to be the focal point in the development of the future.
IDEALIZED DIAGRAM OF PACIFIC PREVAILING WINDS
### APPENDIX C

**HISTORY OF PAN AMERICAN AIRCRAFT FROM 1935 TO 1941—PACIFIC DIVISION**

<table>
<thead>
<tr>
<th>Description of Aircraft</th>
<th>Date Acquired by Pan American</th>
<th>Date Received by Pacific Division</th>
<th>Date Placed in Service</th>
<th>Date Removed from Service</th>
<th>Aircraft on Hand December 7, 1941</th>
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</thead>
<tbody>
<tr>
<td>Sikorsky S-42</td>
<td>December 1934</td>
<td>April 1935</td>
<td>April 1935</td>
<td>July 1936</td>
<td>No 1</td>
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<td>Sikorsky S-42-B</td>
<td>October 1936</td>
<td>March 1937</td>
<td>March 1937</td>
<td>January 1938</td>
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</tr>
<tr>
<td>Sikorsky S-42-B</td>
<td>December 1936</td>
<td>September 1941</td>
<td>September 1941</td>
<td>December 1941</td>
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<tr>
<td>Martin M-130</td>
<td>August 1935</td>
<td>April 1936</td>
<td>May 1936</td>
<td>July 1938</td>
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<td>September 1935</td>
<td>November 1935</td>
<td>December 1935</td>
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</tr>
<tr>
<td>Martin M-130</td>
<td>August 1935</td>
<td>November 1935</td>
<td>November 1935</td>
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</tr>
<tr>
<td>Boeing B-314</td>
<td>March 1939</td>
<td>March 1939</td>
<td>March 1939</td>
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</tr>
<tr>
<td>Boeing B-314</td>
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<td>February 1939</td>
<td>February 1939</td>
<td>July 1941 to September 1941</td>
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<td>Boeing B-314</td>
<td>June 1939</td>
<td>June 1939</td>
<td>July 1940</td>
<td>December 1941</td>
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<td>Boeing B-314A</td>
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<tr>
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<td>July 1941</td>
<td>July 1941</td>
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<td>June 1941</td>
<td>July 1941</td>
<td>August 1941</td>
<td>September 1941</td>
<td>No 9</td>
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</table>

3. First scheduled flight September 22, 1941, Manila-Hong Kong shuttle. Destroyed by the Japanese on December 8, 1941.
4. Lost on a routine passenger flight between Guam and Manila on July 28, 1938.
5. Out of service from October 27, 1941, to January 10, 1942, for conversion to model B-314A type aircraft.
6. Transferred to the Atlantic Division in July 1941 after receipt of two B-314A aircraft by the Pacific Division. Returned to the Pacific Division on September 16, 1941, simultaneously with the sale of a B-314A to the United States Government. Out of service from April 1941 to May 1941 for repairs.
7. Out of service from August 6, 1941, to October 8, 1941, for conversion to model B-314A type aircraft.
8. Transferred to the Atlantic Division on December 18, 1941.

APPENDIX D

PAN AMERICAN PACIFIC DIVISION OPERATIONAL LOSSES
AFTER MAIL PAY HAD BEEN RECEIVED—1937-
DECEMBER 13, 1941*

<table>
<thead>
<tr>
<th>Year</th>
<th>United States</th>
<th>Foreign</th>
<th>Operating Losses</th>
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<tbody>
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<td>1937</td>
<td>1,637,660.67</td>
<td>67,308.06</td>
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<td>1,410,155.75</td>
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<td>1939</td>
<td>2,489,053.69</td>
<td>80,430.96</td>
<td>293,134.87</td>
</tr>
<tr>
<td>1940</td>
<td>2,876,165.47</td>
<td>446,204.16</td>
<td>132,083.51</td>
</tr>
<tr>
<td>1941</td>
<td>3,036,050.80</td>
<td>1,203,871.41</td>
<td>767,766.98**</td>
</tr>
</tbody>
</table>

Total deficit as of November 30, 1941—$976,287.06.


** Profit.
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