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INDIANAPOLIS LANDING AIDS DEMONSTRATED

Air Transport Association Meeting Endorses Authority's Development Program—Airline Personnel Participate in Demonstrations of C. A. A. Instrument Landing System and Controlled Approach Lights

A large-scale demonstration of the Civil Aeronautics Authority's instrument landing system and controlled approach light installation was conducted concurrently with a meeting of the Air Transport Association's operations committee held in February at the Authority's Indianapolis Experimental Station.

The operations committee is composed of the operations executives of 18 air lines. Much of the meeting was devoted to consideration of simplification of safety regulation, but a subcommittee of pilots met to discuss ways of improving flight procedure routine and methods of establishing an improved training program for airline pilots.

Army officials from the Air Corps' experimental center at Wright Field, Dayton, Ohio, and several Navy pilots also participated in the meetings and demonstrations. In addition to the Authority's aircraft equipped for instrument landing there were a twin-motored Army craft and a typical air-line transport so equipped, all of which participated in the tests and demonstration.

Experimental Work Approved

At the close of its meeting, the operations committee adopted a resolution approving the experimental work being conducted by the Authority and recommended that it be continued and expanded.

The Authority's program previously was endorsed by a special committee set up by the National Academy of Sciences at the request of President Roosevelt. This group made a thorough study concerning standardization of instrument landing equipment last fall and made its report early this year.¹

The report also cleared the way for the installation of approximately 10 more systems by the Authority. These are to be located at widely separated airports throughout the United States so as to afford an opportunity for the greatest number of air-line personnel to become thoroughly familiarized with the use of instrument landing equipment under service conditions.

Historical Background

The history of the development of instrument landing extends back a dozen years. In 1928 the National Bureau of Standards began work on a system for the Aeronautics Branch of the Department of Commerce. Using this system, Lt. James H. Doolittle on September 23, 1929, made the first successful instrument landing in history.

Year after year, the Bureau of Standards, the Aeronautics Branch (later the Bureau of Air Commerce), the Army Air Corps, the Navy Bureau of Aeronautics, and numerous commercial groups conducted their experiments. The Indianapolis system, embodying the best features of previous efforts, was brought to its present state by the Civil Aeronautics Authority in accordance with the recommendations of the Radio Technical Committee for Aeronautics.

Description of the Indianapolis System

Numerous technical descriptions of the Indianapolis instrument landing equipment have appeared in various publications of the Government and other agencies. For the purpose of this article, therefore, the physical equipment and operation of the Indianapolis system will be briefly described in non-technical terms.

(Continued on next page)

IN THIS ISSUE

PRIVATE FLYING

(Page 112)

Authority offers refresher courses to civilian instructors . . . 600 commercial pilots to receive specialized training in elements of flight instruction . . . Designation of medical examiners . . . Summary of active certificates

AIRWAYS AND AIRPORTS

(Page 113)

Airport projects approved . . . New editions of aeronautical charts . . . newly appointed dealers in charts

AIR TRANSPORTATION

(Page 114)

Three certificate of convenience and necessity cases decided . . . Northwest Airlines authorized to establish Twin Cities-Duluth service . . . permission for other routes in Wisconsin, Minnesota, and Michigan denied . . . Continental Airlines certificate amended to permit new stops on Denver-El Paso route . . . Condor Air Lines denied "grandfather" certificate on Alameda-Monterey route

OFFICIAL ACTIONS

(Page 115)

Opinions and abstracts of orders and regulations issued by the Authority during the period March 1-15, 1940

¹ See Civil Aeronautics Journal, Vol. I, No. 3, February 1, 1940.



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Indianapolis Landing System

(Continued from preceding page)

The system is operated by radio and consists of four fundamental elements: A runway localizer which provides a range course for lateral guidance; a glide path which provides a means for descent; and two vertical marker beacons to indicate the progress of approach to the landing field.

The effect of the localizer beam radio transmission is to provide an imaginary vertical plane extending along the center line of the runway in the direction of approach. (See fig. 1.)

A needle on an instrument before the pilot remains in a vertical position as long as the airplane is in this imaginary plane. If the airplane deviates to the right, the needle swings to the left and the pilot must turn his craft to the left until the needle swings back to the vertical. Exactly the opposite occurs if the aircraft deviates to the left.

The effect of the glide path radio transmission is to provide a surface² inclining away from the approach end of the runway at an angle of 3° to 4° from the earth's surface. At about 5 miles

from the end of the runway the glide path is approximately 1,500 feet above the ground. (See fig. 1.)

A horizontal pointer, crossing the vertical needle mentioned previously, tells the pilot whether the aircraft is flying above or below, or directly along the imaginary inclined surface. If the needle falls below the horizontal the pilot must descend to intercept the glide path and, conversely, if the needle swings above the horizontal the pilot must climb to regain the glide path. (See fig. 1, insets showing instrument readings.)

The intersection of these two imaginary surfaces provides an imaginary line (see black line followed by aircraft in fig. 1) which inclines at a gentle angle upwards from the end of the runway for many miles. By means of the two

² Actually, the glide path is formed by a portion of a curved surface, however, the portion utilized for the approach is relatively straight, and for the purpose of a simplified explanation may be thought of as a narrow inclined surface, curved slightly at the bottom to meet the runway at a gentle angle.

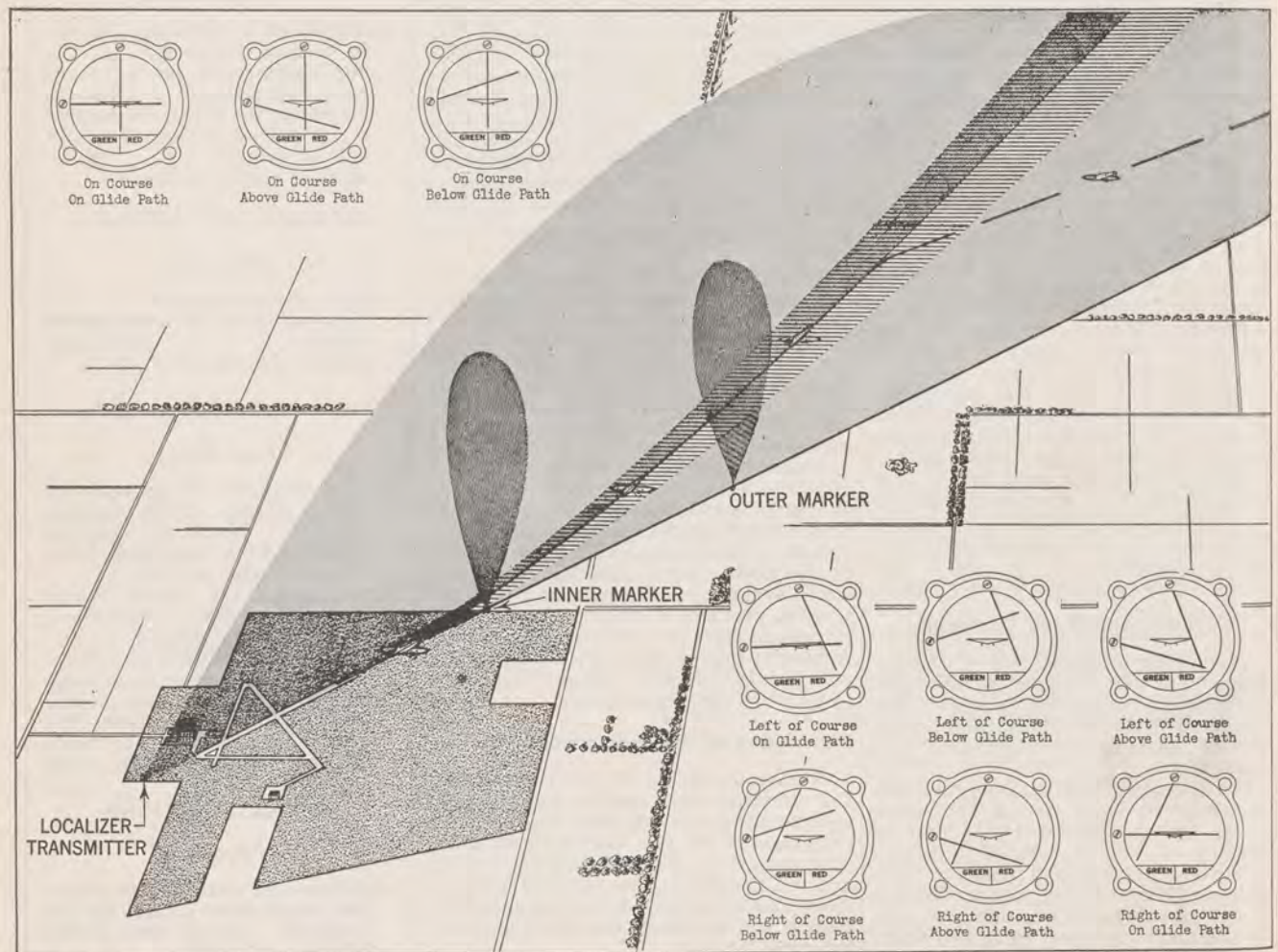


Figure 1.—Indianapolis instrument landing system showing how the line of intersection of a vertical plane and an inclined surface form a glide path down which the aircraft may fly safely to the airport runway. Inserts show how various instrument indications guide the pilot in making his approach and landing.

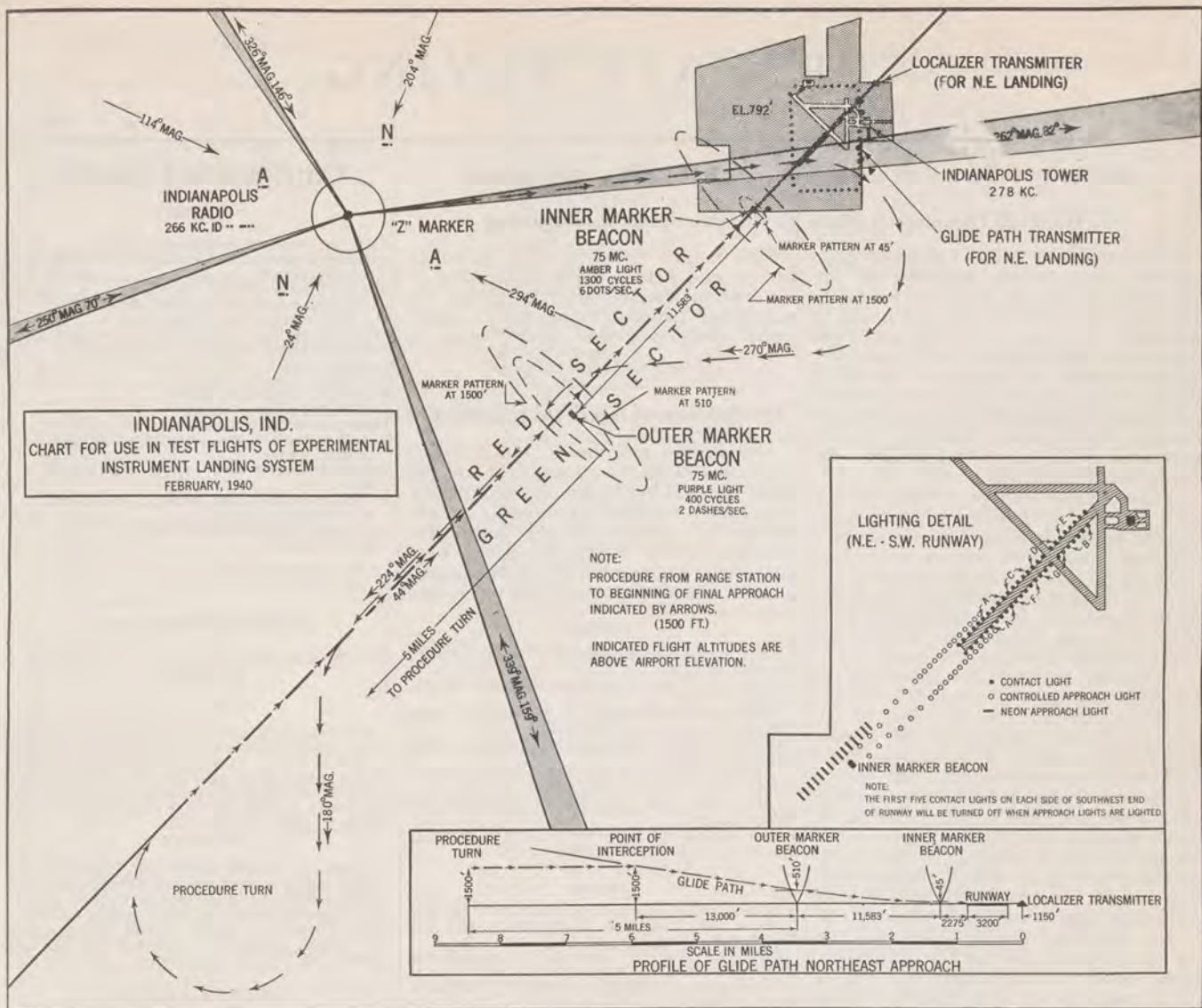


Figure 2.—This chart is similar to that actually used by pilots in test flights of the experimental installation at Indianapolis. Procedure followed by the pilot in picking up the glide path, and the distances involved are clearly indicated.

instrument indications already described the pilot can fly his aircraft downward along this imaginary line with a high degree of precision.

The radio marker beams are directed upward and the signals fill an inverted fan-shaped space intersecting the localizer beam and crossing the glide path. (See fig. 1.) The outer marker is about 2 miles from the airport and intercepts the glide path at a point where it is 510 feet from the ground. The inner marker is located at the boundary of the field in line with the runway and intercepts the glide path at an altitude of 45 feet. The exact distances are shown in figure 2.

Markers Flash Signals in Plane

Flying over the outer marker causes a purple light to flash on the aircraft's instrument panel at a rate of two dashes per second for a period of 8 seconds, while at the same time a characteristic audible signal is transmitted and re-

ceived by the pilot through his headphones. The inner marker flashes an amber light at a rate of six dots per second for approximately $1\frac{1}{2}$ seconds, and provides an audible signal plainly distinguishable from that of the outer marker.

At the bottom of the instrument faces shown in figure 1 there is a sector split in the middle with green on the left and red on the right. The chart used by the pilot is tinted red in the area to the left of the localizer beam and green to the right, as indicated in figure 2. Thus, whenever the vertical needle points to the green sector the pilot knows he is in the green area indicated on the chart, and if the needle points to the red area of the chart, regardless of the heading of the ship.

Four complete sets of equipment are installed at Indianapolis, providing instrument landing facilities for four wind directions. The whole system is monitored and controlled from the air-

port control tower, permitting a ready choice of the proper runway suitable for use under existing wind conditions at the time of landing.

The procedure employed by the pilot to approach and intercept the glide path is clearly shown by the broken arrows and explanatory comment in figure 2.

The Controlled Approach Light System

Concurrently with the tests and demonstrations of the instrument landing system, the Authority is conducting experiments with a controlled approach light system at Indianapolis. This system has three possible applications: It can be used independently of radio aids to assist in contact landings at night or under conditions of restricted visibility; it can be used in conjunction with the conventional directional radio range whereby the approach would be made on instruments and the landing

(See INDIANAPOLIS, page 156)

PRIVATE FLYING

Authority Offers Refresher Courses to Civilian Instructors

Six Hundred Commercial Pilots To Receive Specialized Training

The Authority has virtually completed arrangements whereby an opportunity to take a refresher course in the elements of flight instruction will be afforded to about 600 civilian flight instructors throughout the country. Approximately 20 approved advanced flying schools, so selected as to give wide geographical distribution in the United States, will serve as training centers conducting the specialized courses for the selected applicants.

The refresher course is open to any pilot holding a currently effective commercial pilot's certificate of competency who has not already been rerated as an instructor. Preference in selecting applicants is given, however, to those pilots interested in instructional work in connection with the Authority's Civilian Pilot Training Program.

Early last summer the Authority, as the first step in a general drive to increase safety in the training of all student pilots, ruled that all airmen holding flight instructor's ratings should familiarize themselves with the standardized methods of training developed as a result of the Authority's initial flight training program and be rerated before October 1, 1940, as to their competency to give flight instruction. Rerating tests are conducted by the Authority's aeronautical inspectors.

Out of approximately 4,000 instructors now registered with the Authority, 1,043 have already met the stiffer requirements and been rerated. Most of these are engaged in the Authority's training program for which rerating was a requirement. It is expected that the entire number will have been examined well in advance of the October 1 deadline originally set.

"The results of the Civilian Pilots Training Program have been so satisfactory in the production of safely trained pilots," Robert H. Hinckley, Chairman of the Authority, said in announcing the refresher courses, "that the methods employed in these courses should be extended to all pilot training. But in order that no undue hardship be imposed on men who have, in many cases, devoted years to aviation, the Authority has decided to provide facilities whereby these men can learn quickly what we will require of them. If they cannot meet the new requirements, which involve the ability to teach as well as to fly and the knowledge of how to teach by methods which the student program has proved to be safe methods, they must stop teaching."

The refresher course now being offered to qualified pilots is designed not merely to prepare the pilot for this rerating examination but, equally important, to further equip him as a safe instructor.

The course consists of a thorough review and actual flight instruction in the various maneuvers comprising the controlled private flying course especially developed and now being so

(Continued on next page)

Designation of Medical Examiners

During the months of January and February 1940, the names of 11 physicians were added to the list of officially authorized medical examiners for the Authority. Three of the physicians named, all in South America, were authorized to examine air-line transport pilots. The newly appointed examiners are:

January

New Jersey.—Dr. Richard T. Buckley, Peddie School, Hightstown.

Texas.—Dr. Claude L. Jackson, 211 North Austin, Ranger.

Washington.—Dr. Russell K. Behrns, 825 South Cleveland Avenue, Mount Vernon.

West Virginia.—Dr. Samuel W. Cottle, 218 High Street, Morgantown.

Argentina.—Dr. Louis Rossignoli, Azcuenaga 923, Buenos Aires.

Brazil.—Dr. Franklin T. Pyles, Caixa Postal, 504, Rio de Janeiro.

Peru.—Dr. Virgil T. De Vault, British American Hospital, Casilla No. 416, Callao.

February

Missouri.—Dr. Edwin H. Magee, Unionville.

Oregon.—Dr. Charles B. Wade, 348 Medical Arts Building, Roseburg.

Texas.—Dr. Paul M. Ramey, Scott and White Clinic, Temple.

Washington.—Dr. Jasper A. Smith, 805 Kamiaken Street, Pullman.

The following-named physicians are no longer conducting examinations for the Civil Aeronautics Authority:

Dr. Theron E. Fuller, Texarkana, Ark.
Dr. John T. Sprague, Athens, Ohio.

Certificates and Approvals

Summary¹

Pilot certificates of competency, active.....	33,459
Air-line transport pilot certificates of competency, active.....	1,193
Student pilot certificates, active.....	41,457
Glider pilot certificates of competency, active.....	151
Student glider pilot certificates, active.....	291
Mechanic certificates of competency, active.....	10,103
Parachute rigger certificates of competency, active.....	427
Certificated aircraft, active.....	12,520
Uncertificated aircraft, active.....	567
Certificated gliders, active.....	40
Uncertificated gliders, active.....	83
Repair stations holding certificates of competency, active.....	191
Ground instructors certificates of competency, active.....	579
Air-traffic control-tower operators certificates of competency, active.....	215
Air carrier dispatchers certificates of competency, active.....	315

¹ As of March 1, 1940.

New Type Certificates

[Certificate numbers and dates of assignment in parentheses]

AIRCRAFT

Howard, DGA-15J and DGA-15P, five-place closed land monoplane. Engine, Jacobs L-6MB (for model DGA-15J) or Pratt & Whitney Wasp Jr. SB (for model DGA-15P) (717, February 20, 1940).
Boeing, S-307, 39-place closed land monoplane. Engines, 4 Wright Cyclones GR-1820G-102 (719, March 13, 1940).

APPLIANCES

United Air Lines, safety belt, model 6U-187. Approved for two persons (128, February 28, 1940).
Shakespeare, controls, models C-14-C and C-2164-C, flexible push pull (131, February 6, 1940).
Graf-Schupe, Skis, model A, steel tubing pedestal and runner. Approved static load per ski 1,200 pounds (132, February 19, 1940).

Letter of Approval

[Number and date of assignment in parentheses]

AIRCRAFT

Meyers, OTW, two-place open land biplane, engine, Warner Scarab, Series 40 (2-550, August 22, 1939).

Aircraft Radio Equipment Approved for Scheduled Air Carrier Use

During the month of February 1940 the following units of aircraft radio equipment were approved by the Authority for scheduled air carrier use and issued type certificates.

Certificate number	Manufacturer	Unit	Date
93	Bendix Radio Corporation.....	MR-16B radio range filter.....	Jan. 28
392	do.....	MX-9A crystal unit.....	Jan. 26
394	do.....	MX-9C crystal unit.....	Do.
395	do.....	MX-9D crystal unit.....	Do.
396	do.....	MX-9E crystal unit.....	Do.
397	do.....	MX-9F crystal unit.....	Do.
398	do.....	MX-9G crystal unit.....	Do.
399	do.....	MR-13A dual drive coupler.....	Jan. 28
460	do.....	MN-24A rotatable loop.....	Do.
143	Western Electric Co.....	7B apparatus mounting.....	Jan. 19
243	do.....	8A apparatus mounting.....	Jan. 23
247	do.....	7C apparatus mounting.....	Jan. 19
440	RCA Manufacturing Co.....	AVR-7H aircraft receiver.....	Jan. 8
480	Braniff Airways.....	Type 17-C control box.....	Jan. 17
481	do.....	Type 17-CA audio mixing amplifier.....	Do.
482	do.....	Type 17-CS control panel.....	Do.

Refresher Courses

(Continued from preceding page)

successfully used in conjunction with the Civilian Pilot Training Program. An outline of the standardized course to be given at the appointed schools follows:

Standardization Flight Course for Use in Primary Commercial Instructors' Refresher Schools

1. Preliminary ground instruction.
 - a. Simple explanation of controls.
 - b. Simple explanation of instruments.
 - c. Explanation of throttle.
 - d. Explanation of brakes.
 - e. Explanation of fuel system.
 - f. Use of safety belts.
 - g. Location of fire extinguisher.
 - h. Location of first-aid kit.
 - i. Warnings:
 - (1) Propeller danger.
 - (2) Running engine with empty cockpit.
 - (3) Local traffic rules.
 - j. Instruction signals.
 - k. Starting procedure.
 - l. Swinging propeller.
 - m. Warming up engine.
 - n. Stopping engine.
 - o. Line inspection of aircraft.
 - p. Use of parachutes.
2. Taxiing; Into wind, cross wind, down wind, gusty air.
3. Take-off: Into wind and cross wind.
4. Straight and level flight.
5. Medium turns right and left, steep turns and rolling from right to left in all turns.
6. Gentle climbs and glides.
7. Confidence maneuvers.
8. Coordination exercises: S turns, elementary eights.

9. Rectangular course around ground objects.
10. Normal climbing and gliding turns, maximum climbing turns, precision climbing turns, rolling from right to left in all turns.
11. Approaches to stall power on and power off.
12. Advanced stalls power on and power off.
13. Normal and accidental entry to spins: From skidding turns, climbing turns, vertical banks.
14. Precision spins, $1\frac{1}{2}$, 2, 3 turns each way with N. A. C. A. recovery.
15. Simulated forced landings: On take-off, 90° to wind, 180° to wind.
16. 720° power turns, 70° banks, right and left, precision.
17. 30° eights around pylons. (Altitude 500 feet—maximum starting bank 30° .)
18. 70° eights around pylons. (Altitude 800 feet—minimum starting bank 70° .)
19. Medium eights on pylons.
20. Precision landings. (One hundred and eighty degrees side approach—altitude not to exceed 1,000 feet.)
21. Precision landings. (Three hundred and sixty degrees overhead approach—altitude not to exceed 1,500 feet.)
22. Precision landings. (Spiral approach—minimum two turns—altitude not to exceed 2,000 feet.)
23. Chandelles.
24. Lazy eights.
25. Slips: Forward, side.
26. Power approaches.
27. Power landings.
28. Dragging field.
29. Landings: Into wind and cross wind.

A minimum of 7 and a maximum of 10 hours of flight instruction, varying according to individual requirements, will be given to each pilot taking the course, of which time not less than 4 hours will be dual instruction. The operator conducting the course may present the instructor applicant to an Authority inspector for rating at any time between 7 and 10 hours, when, in his opinion, the applicant is qualified to receive his rating.

Each applicant accepted by the Authority for the training is required to provide his own transportation to and from the training center to which he is assigned, and his own subsistence during the training period. He is also required by the Authority to provide himself before commencing training with an accident insurance policy in the amount of \$3,000 and medical reimbursement policy for \$500, both to be effective for the duration of the training period. The cost for these policies will be approximately \$8. These will be the only expenses borne by the pilots taking the course. The Authority will pay the school \$100 for each trainee.

Before working out arrangements for this project the Authority's Private Flying Development Division sent out a questionnaire to commercial pilots in which they were asked whether or not they were interested in securing a primary flight instructor's rating. The survey revealed that a large number were interested, and these pilots were subsequently forwarded application blanks for the refresher training.

As this issue of the JOURNAL goes to press the selection of applicants and final arrangements with the participating schools are being made, with the expectation that the actual training will be under way early in April.

AIRWAYS AND AIRPORTS

Airport Projects Approved

In accordance with the provisions of section 303 of the Civil Aeronautics Act, the Administrator of the Authority has issued certificates of air navigation facility necessity authorizing the expenditure of Federal funds in the operation of the following projects:

Adel, Ga.—\$60,832 for W. P. A. project for construction of an airport, the work to include clearing and grubbing, grassing runways, excavation, fencing, laying pipe, and complete construction of a hangar.

Blacksburg, Va.—\$21,142 for W. P. A. project for construction of shops (addition to hangar), boilerhouse, and septic tank with disposal field; installation of drainage facilities and concrete floors; installation of heat, water, and electrical facilities in present new addition to hangar building; and perform-

ance of incidental and appurtenant work. This project also includes the demolition of old gymnasium on campus, operation of quarry and making of cinder blocks to produce materials for use on this project at V. P. I. Airport.

Dodge City, Kans.—\$38,445 for W. P. A. project for grading landing strips; demolishing present building; placing underground power and light lines; installation of water line; construction of temporary driveway; clearing trees, and performance of incidental and appurtenant work.

Flathead National Forest, Mont.—\$2,585 for United States Department of Agriculture, Forest Service project for construction of NW.-SE. landing strip 2,500 feet long by 400 feet wide at Danaher Landing Field.

New Bedford, Mass.—\$263,533 for W. P. A. project for construction of a new airport, the work to consist of cut-

ting and removing trees, low wood and bushes; excavating; hauling; filling; placing loam; removing boulders; installing drainage; grading; constructing two runways, each 3,500 feet long; surfacing; mixing and pouring concrete; laying pipe; backfilling; constructing catch basins; seeding; fertilizing and rolling; crushing and hauling stone; building construction sheds; constructing drain and filter bed; erecting chain link fence; lighting; and performing appurtenant and incidental work.

Oakland, Calif.—\$236,758 for W. P. A. project for construction and repair of overhaul shop building, construction of motor test building and garage building, and improvements to grounds at municipal airport.

Omaha, Nebr.—\$32,988 for W. P. A. project for alterations to the present administration building; alterations to the

(Continued on next page)

Airways and Airports

(continued from preceding page)

present utility building; construction of a new administration building annex; and landscaping at municipal airport.

Orange, Wis.—\$30,674 for W. P. A. project for grading, draining, leveling, resurfacing and performing incidental and appurtenant work at Camp Williams Airport.

St. Louis, Mo.—\$22,200 for W. P. A. project for rehabilitating and remodeling building; constructing an addition to the administration building; providing additional facilities for Missouri National Guard units by constructing and improving parking, recreational, and training areas, and performing incidental and appurtenant work at municipal airport, Lambert Field.

St. Paul, Minn.—\$42,577 for W. P. A. project for construction of three-story and basement hangar addition at Holman Municipal Airport.

Aeronautical Charts

New Editions Issued

During February the following new editions of aeronautical charts were

issued by the United States Coast and Geodetic Survey. Pilots are warned that previous editions of the same charts are canceled and now obsolete.

REGIONAL CHART

6-M.—February 1940. Scale, 1:1,000,000. Size, 26 by 38 inches. Price, 75c. Located in latitude 38°-44° north and longitude 114°-125° west, an area of some 245,000 square miles. Shows changes in air navigation facilities.

SECTIONAL CHARTS

Chicago.—February 1940. Size, 20 by 42 inches. Located in latitude 40°-42° north, longitude 84°-90° west, covering an area of about 51,000 square miles. Includes new radio range at Fort Wayne and an accumulation of changes since the last edition.

Le Grande.—February 1940. Size, 20 by 39 inches. Located in latitude 44°-46° north, longitude 114°-120° west, an area of about 47,000 square miles. Shows new radio range at Arlington and Baker Valley. Boise radio range relocated and beacons relocated on the Seattle-Spokane route.

Lake of the Woods.—February 1940. Size, 20 by 37 inches. Located in latitude 48°-50° north and longitude 90°-96° west, an area of some 45,000 square miles. Radio ranges realigned at Kenora and Sioux Lookout.

Miles City.—February 1940. Size, 20 by 38 inches. Located in latitude 46°-48° north and longitude 102°-108° west, covering an area of about 47,000 square miles. New radio ranges at Big Horn and Golva and an accumulation of changes since last edition.

Milwaukee.—February 1940. Size, 20 by 40 inches. Located in latitude 42°-44° north and 84°-90° west, an area of some 49,000 square miles. Realignment of the east leg of the radio range at Milwaukee and accumulation of other changes.

Williston.—February 1940. Size, 20 by 37 inches. Located in latitude 48°-50° north, longitude 102°-108° west, an area of about 45,000 square miles. Gives radio ranges realigned at Swift Current, Regina, and Broad View.

Copies of aeronautical charts may be obtained from the United States Coast and Geodetic Survey, Washington, D. C., and from that Bureau's recognized dealers at major airports. Regional charts sell for 75 cents apiece, and sectional charts for 40 cents. On orders grossing \$10 or more, including assortments, a 33½-percent discount is allowed by the Coast and Geodetic Survey.

"Recognized Dealers"

The United States Coast and Geodetic Survey has announced the appointment of the following as "recognized dealers" authorized to sell its aeronautical charts.

Indiana.—Roscoe Turner Aeronautical Corporation, Indianapolis. [This dealer supersedes Central Aeronautical Corporation, municipal airport, Indianapolis, on the Bureau's list of dealers.]

New Hampshire.—Mr. William E. Martin, Concord Municipal Airport, Concord.

Oklahoma.—Spartan Aircraft Company, Tulsa.

AIR TRANSPORTATION

Three Certificate of Convenience and Necessity Cases Decided

Northwest Authorized to Establish Twin Cities-Duluth Service—Continental Certificate Amended to Permit New Stops on Denver-El Paso Route—Condor Denied "Grandfather" Certificate for Alameda-Monterey Route

The Civil Aeronautics Authority on March 6 authorized the issuance of a certificate of public convenience and necessity to Northwest Airlines, Inc., for a new route between the Twin Cities (St. Paul and Minneapolis) and Duluth, Minn., to carry mail, passengers, and express. The line will also furnish service to Superior, Wis., which lies near Duluth. At the same time the Authority denied permission to the company to establish service on several other routes between various points in Wisconsin, Minnesota, and Michigan. This decision was the first issued by the Authority on an application for a new route certificate. On March 8 the Authority handed down two more decisions, one granting Continental Air Lines, Inc., permission to establish a service for mail, passengers, and express on a new route between Albuquerque, N. Mex., and El Paso, Tex., via Roswell, Hobbs, and Carlsbad, N. Mex., by authorizing an amendment to the Denver-El Paso certificate already held by the company, and the other denying the application of Condor Air Lines, Inc., for a "grandfather clause" certificate for a route between Alameda and Monterey, Calif., via San Francisco and Salinas.

In an opinion accompanying the Northwest Airlines decision the Authority reviews the broad standards set forth in the Civil Aeronautics Act of 1938 for the issuance of such certificates of public convenience and necessity. "Obviously," the opinion states, "in the light of these standards, it was not the congressional intent that the air transportation system of the country should be 'frozen' to its present pattern. On the other hand, it is equally apparent that Congress intended the Authority to exercise a firm control over the expansion of air transportation routes in order to prevent the scramble for routes which might occur under a 'laissez faire' policy."

In deciding upon the merits of each application for a new route the opinion points out that the Authority must consider the amount of financial obligation the route would impose upon the Federal Government, not only in air-mail payments but also for the construction, operation, and maintenance of airways which in most cases follow the establishment of new air lines.

In discussing the various routes covered by the order, the Authority in its opinion considers the distribution of population along each proposed route,

the existence and adequacy of other forms of transportation, the established flows of surface traffic and other factors indicating the traffic potentialities of such a route in terms of air-line passengers, mail, and express. Specifically, the Authority found that sufficient evidence had been presented to justify the establishing of a new line between the Twin Cities and Duluth. It further found that proposed routes between Green Bay, Wis., and Duluth, Minn., across Wisconsin and between Marquette, Mich., and Duluth, along the south shore of Lake Superior, gave little promise of potential traffic.

Of the route between Milwaukee and Marquette, by way of Green Bay, the Authority found that need for air transportation had not been sufficiently established by the evidence submitted. "The sparsity of the presentation made by the applicant," the opinion states in discussing the Milwaukee-Marquette application, "on the economic characteristics of this region was striking. Comparative data which would have seemed of obvious pertinence were omitted from the record, and neither the applicant nor the representatives of the communities appearing as witnesses provided material on the basis of which there could be a finding that the air transportation for which authorization was sought was required by the public convenience and necessity."

The Continental Air Lines case was the first one decided in which the Post

(See AIRLINE CASES, page 156)

CIVIL AERONAUTICS AUTHORITY

OFFICIAL



ACTIONS

OPINIONS, ORDERS AND REGULATIONS

FOR THE PERIOD MARCH 1-15, 1940, INCLUSIVE

C. A. A. OPINIONS

C. A. A. Opinions—Vol. I Temporary
Page No. LV

IN THE MATTER OF CHESTER L. PHILLIPS, JR., HOLDER
OF PRIVATE PILOT CERTIFICATE NO. 62303

Decided March 1, 1940

OPINION

By THE AUTHORITY:

A report of certain violations of the Civil Air Regulations and acts of recklessness in the operation of aircraft by Chester L. Phillips, Jr. (hereinafter referred to as the "respondent"), was filed with the Authority on December 11, 1939, by a member of its inspection staff. In accordance with the customary procedure, the respondent was advised of the charges against him, given notice of his statutory right to a hearing prior to action by the Authority suspending or revoking his pilot certificate, and requested to inform the Authority if he wished to take advantage of this right. In reply, the respondent waived his right to a hearing and requested the Authority to make its determination as to the possible suspension or revocation of his pilot certificate upon the evidence before it.

Our records contain evidence sufficient to substantiate the following facts:

The respondent, the holder of a private pilot certificate, is a student at the North Texas Agricultural College located at Arlington, Tex. He received the training necessary to secure his private pilot certificate under the experimental Civilian Pilot Training Program conducted under the supervision of the Authority during the spring of 1939. On November 28, 1939, Mr. Phillips rented a Taylorcraft from its owner at Meacham Field, Fort Worth, Tex. He then pro-

CORRECTION

In Docket No. SR-32, "In the Matter of the Petition of Bruce L. Dunbar, of Boston, Mass., for Reconsideration of Application for Private Pilot Certificate," which appeared on page 60 in the Official Actions section of Vol. 1, No. 4, of the Civil Aeronautics Journal, the appearances were erroneously named as Douglas L. Hatch and Lambert S. O'Malley. Correction should be made as follows:

APPEARANCES:

Bruce L. Dunbar, in his own behalf.

Glen D. Woodmansee, counsel for the Civil Aeronautics Authority.

NOTE ON THE ARRANGEMENT OF THESE PAGES

This part of the JOURNAL in each issue presents a current record of the official actions taken by the Civil Aeronautics Authority. Digests of all orders and regulations are carried in outer columns under the title "Abstracts." Persons having specific interest in any of these orders may obtain complete verbatim copies by writing to the Director of Statistics and Information, Civil Aeronautics Authority, Washington, D. C.

The large inner columns, set in different type, carry verbatim all opinions accompanying Authority actions. The type and format used will be utilized in the preparation of bound volumes of opinions of the Authority which will be issued at appropriate intervals. After the first volume is completed, the temporary page numbers now used will be replaced by the actual volume and page number which the text will carry in the bound volumes.

ABSTRACTS

ORDERS

Order No. 408: Private pilot certificate of Chester L. Phillips, Jr., revoked.

The Authority on March 1 revoked private pilot certificate No. 62303, held by Chester L. Phillips, Jr., Caddo Mills, Tex. (For full text of opinion and order, see p. 115.)

Order No. 409: Violation referred to the Attorney General for judicial action.

The Authority on March 1 referred the following case to the Attorney General for judicial action under the Civil Aeronautics Act of 1938:

S. Edward Thomas, Winchester, Va.—For piloting an aircraft on and across various civil airways when said aircraft was not certificated as airworthy, in violation of the Civil Air Regulations.

Order No. 410: Offer accepted in compromise of civil penalties for violations.

The Authority on March 1 accepted the following offer in compromise of civil penalties incurred for violations of the Civil Aeronautics Act of 1938 and the Civil Air Regulations:

French R. Haile, Austin, Tex.—For piloting an aircraft on a civil airway acrobatically at a height less than 1,500 feet and other violations—\$100.

Order No. 411: Commercial pilot certificate of Howard F. Dutton suspended.

The Authority on March 1 suspended for a period of 90 days, commercial pilot certificate No. 34505, held by Howard F. Dutton, Montpelier, Vt. (For full text of opinion and order, see p. 117.)

Order No. 412: Solo pilot certificate of James Cashen revoked.

The Authority on March 1 revoked solo pilot certificate No. 71757, held by James Cashen, Batson, Tex., for piloting an aircraft carrying a passenger other than a certificated instructor actually giving instruction and other violations.

ceeded with a passenger, also a student at North Texas Agricultural College, to the campus of John Tarleton College at Stevensville, Tex., arriving there about 4:30 p. m. A large crowd of students were gathered on the campus around a pile of debris which they intended to ignite to accompany a pep meeting to be held in preparation for a football game with the North Texas Agricultural College on the following day. The respondent, apparently in an attempt to disrupt the plans of the students of the rival college, flew over this pile of debris three times at an altitude estimated by eyewitnesses to be from 30 to 50 feet above the ground and from 15 to 30 feet above the top of the pile. Each time his passenger dropped light bulbs filled with water and phosphorus which were intended to ignite the

C.A.A. Opinions—Vol. I *Temporary
Page No. LVI*

bonfire. The third time the plane was so low that when the pilot attempted to gain altitude in order to avoid surrounding trees and houses, the airplane stalled and he was forced to make a landing on the campus. In landing, the wing tips of the ship struck two trees and finally came to rest just short of a stone wall.

In making these flights this pilot violated two provisions of the Civil Air Regulations: section 60.350 which prohibits the flight of an aircraft at an altitude of less than 1,000 feet over a congested area, and section 60.347 which prohibits any person on board an aircraft from dropping objects therefrom while the aircraft is in flight, and makes the pilot of the aircraft responsible for securing observance of the regulation by his passenger.

There can be no excuse for a violation of the Civil Air Regulations by a pilot of the respondent's training and experience, particularly those provisions involved here. As we have previously stated, Mr. Phillips received his training in the experimental Pilot Training Program conducted by the Authority during the spring of 1939. In connection with this program every effort was made to assure the students participating in the program the finest of flight instruction and the most thorough preparation in ground school subjects which include the Civil Air Regulations. Thus, having provided and supervised the course of training which this pilot underwent prior to his receipt of his private pilot certificate, we know that he has a thorough knowledge of the Civil Air Regulations. The respondent, in making this flight and being fully aware of the applicable provisions of the Civil Air Regulations, could hardly have chosen a more spectacular fashion of demonstrating his complete contempt for them.

However, it is not necessary to point to particular violations of specific regulations. A more important element in this case is the indication by this pilot of recklessness, immaturity of judgment, and disregard for the lives and property of others. He has revealed a lack of the characteristics which are most essential in the make-up of a good pilot. Due to the increase of flying and the increase of the number of pilots and the number of aircraft using the air space, safety in air navigation can be obtained only by rigid adherence not only to the regulations of the Authority, but also to those principles of safe flying which are so fundamental that the Authority has not deemed it necessary to prescribe them in the form of regulations. The great need for these qualifications exists now and it will become greater as the years pass and the number of aircraft and pilots increase.

The Authority is directed in section 2 of the Civil Aeronautics Act to regard the encouragement and development of civil aeronautics as being in the public interest. The Congress, in enacting the Civilian Pilot Training Act of 1939, gave to the Authority additional power to carry out this declaration of policy. The Authority was authorized to

C.A.A. Opinions—Vol. I Temporary
Page No. LVII

expend not to exceed \$7,000,000 of appropriated Federal funds in the training of a great number of civilian pilots, nearly 10,000 each year. However, this power must be exercised with due regard to our further obligation to take such steps as are necessary to preserve safety in air commerce. The release of 10,000 new private pilots each year will increase in corresponding degree the necessity for rigid adherence by all pilots to the principles of safe flying, and, in exercising its powers under the Civilian Pilot Training Act, the Authority must produce not only pilots whose flying technique is of high caliber, but also pilots who are temperamentally fit to fly under modern conditions: that is, those who have the proper regard for the laws and dictates of common sense which govern flying and for the lives and property of others.

While for these reasons we consider it our duty to take drastic action in the case of violations of the Civil Air Regulations or indications of recklessness on the part of any pilot, this duty is even more impelling when such acts are committed by a person who has been trained in the Civilian Pilot Training Program, for he has had the advantage of a carefully drawn and supervised course of flight and ground training designed not only to perfect his flying technique, but to instil in him a knowledge of, and a desire to obey, the rules of safe flying.

Section 609 of the Civil Aeronautics Act empowers us to revoke a pilot certificate for any cause which, at the time of revocation, would justify the Authority in refusing to issue to the holder of such certificate a like certificate. For the reasons stated herein and upon the facts contained in the record of this case, we find that there exists sufficient cause to justify the revocation of the private pilot certificate of the respondent.

ORDER

The Civil Aeronautics Authority, upon the foregoing findings and conclusions and pursuant to section 205 (a) and section 609 of the Civil Aeronautics Act of 1938, orders that private pilot certificate No. 62303 issued to Chester L. Phillips, Jr., of Caddo Mills, Tex., be, and the same is, revoked.

Hinckley, Mason, Warner, Members of the Authority, concurred in the above opinion and order. Branch and Ryan, Members, did not take part in the decision.

C.A.A. Opinions—Vol. I Temporary
Page No. LVIII

IN THE MATTER OF HOWARD F. DUTTON, HOLDER OF
COMMERCIAL PILOT CERTIFICATE NO. 34505

Decided March 1, 1940

OPINION

BY THE AUTHORITY:

Howard F. Dutton, of Montpelier, Vt., the holder of a commercial

APRIL 1, 1940

218014-40-2

ABSTRACTS

(Continued)

Order No. 413: Private pilot certificate of Richard S. Stearns, Jr., revoked.

The Authority on March 1 revoked private pilot certificate No. 43718, held by Richard S. Stearns, Jr., Tucson, Ariz., for piloting an aircraft over an open air assembly of persons at an altitude of less than 1,000 feet and other violations.

Order No. 414: Aircraft and engine mechanic certificate of R. S. Johnson revoked.

The Authority on March 1 revoked aircraft and engine mechanic certificate No. 3870, held by R. S. Johnson, Houston, Tex. (*For full text of opinion and order, see docket No. SR-35, p. 119.*)

Order No. 415: Violation referred to the Attorney General for judicial action.

The Authority on March 5 referred the following case to the Attorney General for judicial action under the Civil Aeronautics Act of 1938 for certain violations of the Civil Air Regulations.

Marvin O. McKnight, Houston, Tex.—For piloting an aircraft on a civil airway carrying a person other than a certificated instructor actually giving instruction, in violation of the terms of his student pilot certificate, and on such flight for flying said aircraft acrobatically without being equipped with a parachute.

Order No. 416: John E. McKelvey and Marquette Airlines to intervene in application of TWA.

The Authority on March 5 granted John E. McKelvey and Marquette Airlines, Inc., permission to intervene in the application of Transcontinental & Western Air, Inc., for approval of a contract.

Order No. 417: Northwest route applications decided.

The Authority on March 6 authorized Northwest Airlines to operate between St. Paul and Duluth but denied permission to establish services on several other routes. (*For full text of opinion and order, see docket Nos. 131 and 232, p. 123.*)

ABSTRACTS

(Continued)

Order No. 418: Solo pilot certificate of Richard G. Purcell, Jr., suspended.

The Authority on March 8 suspended for a period of 30 days from February 11, 1940, solo pilot certificate No. 66666, held by Richard G. Purcell, Jr., Burbank, Calif., for piloting an aircraft over a congested area at an altitude not sufficient to permit at all times an emergency landing outside of such area in the event of complete power failure, and other violations.

Order No. 419: Offers accepted in compromise of civil penalties for violations.

The Authority on March 8 accepted certain offers in compromise of civil penalties incurred for violations of the Civil Aeronautics Act of 1938 and the Civil Air Regulations, as follows:

Carroll Burkhard, Winner, S. C.—For piloting an aircraft on and across various civil airways without being possessed of a valid pilot certificate—\$50; and

Robert Des Marais, Wayzata, Minn.—For piloting an aircraft acrobatically at an altitude of less than 1,500 feet and other violations—\$100.

Order No. 420: Student-pilot certificate of James Henry Layne suspended.

The Authority on March 8 suspended for a period of 30 days from February 13, student-pilot certificate No. 59350, held by James Henry Layne, Van Nuys, Calif., for piloting an aircraft on a civil airway carrying a person other than a certificated instructor actually giving instruction and other violations.

Order No. 421: Violation referred to the Attorney General for judicial action.

The Authority on March 8 referred the following case to the Attorney General for judicial action under the Civil Aeronautics Act of 1938:

James Henry Layne, Van Nuys, Calif.—For knowingly and wilfully altering his student pilot certificate by deleting the word "student."

pilot certificate, was reported to the Authority by a member of its inspection staff for reckless operation of aircraft. In accordance with the customary procedure, Mr. Dutton was advised of the charges against him, given notice of his statutory right to a hearing prior to action by the Authority suspending or revoking his pilot certificate, and requested to inform the Authority if he wished to take advantage of this right. In reply Mr. Dutton waived his right to a hearing and requested the Authority to make its determination with respect to the possible suspension or revocation of his pilot certificate upon the evidence available to it.

Our record contains evidence sufficient to substantiate the following facts.

Mr. Dutton is the holder of a commercial pilot certificate with an instructor rating and has been participating as instructor in the Civilian Pilot Training Program conducted by the Authority under the Civilian Pilot Training Act of 1939. In accordance with the procedure adopted by the Authority in conducting the program, before being permitted to instruct these students, Mr. Dutton was thoroughly examined by members of the Authority's inspection staff in order to make certain that his flying and instruction technique were of high caliber. Between 7 a. m. and 8 a. m. on November 29, 1939, Mr. Dutton, with one of his students as a passenger, landed on, and took off from, the parade ground at Norwich University, which is 600 feet long by 150 feet wide, and is surrounded on three sides by two- and three-story buildings. Both landing and take-off were made downwind and toward the end of the parade ground which is blocked by buildings.

In making this landing and take-off, Mr. Dutton did not violate any of the regulations issued by the Authority, but the voluntary performance of such a hazardous maneuver indicates the necessity for action by the Authority designed to prevent a reoccurrence of any such incident.

C. A. A. Opinions—Vol. I *Temporary Page No. LIX*

The role of the rated instructor in the future development of aviation is an important one, for upon him rests the responsibility of giving to student pilots the proper preparation for flying under modern conditions. As we stated in our opinion in *In the Matter of Chester L. Phillips*¹ handed down this day, the great increase in pilots and aircraft which has taken place during recent years, and the even greater increase to be anticipated as a result of the Civilian Pilot Training Program requires all pilots to have a thorough knowledge of, and to rigidly adhere to, the principles of safety. The Civil Aeronautics Act of 1938 imposes upon the Authority a heavy responsibility for the accomplishment of this objective, but this responsibility is not solely ours and we alone cannot discharge it. A large share of this responsibility rests with the rated instructors. They must aid in promoting the development of the industry of which they are a part by making certain that all students that they train realize the necessity for safe and conservative flying.

Thus the training of students cannot be restricted to the perfection of their flying technique and the responsibility of the instructor to the student and to the public is not discharged by producing merely a skillful pilot. Students must receive instruction designed to instill

in them a desire to abide by the rules and principles of safe flying. Such instruction cannot be given merely by lecturing to a student upon the necessity and wisdom of careful flying, but must be accompanied by continuous exemplary operation on the part of the instructor. Nothing can be accomplished by an instructor who, in effect, advises his student, "Do not do as I do; do as I say."

This principle is aptly illustrated by the case at hand. The respondent is a pilot of exceptional ability. This ability, taken with a fair measure of good fortune, permitted the respondent to make a downwind landing and take-off under very hazardous circumstances without accident. However, it would be difficult for the respondent to convince the student who was riding with him that it was necessary or wise to refrain from reckless flying, and if the student should attempt to emulate his instructor and perform a maneuver such as this, the flight might well result disastrously.

Thus it appears that the respondent has failed to discharge the heavy responsibility which his position imposes upon him, and, therefore, it is necessary for the Authority to take action against his pilot certificate. The record shows that Mr. Dutton has been removed as an instructor in the Pilot Training Program at Norwich University, and that in itself will unquestionably go far to convince him of the necessity for conservative flying hereafter. However, in addition, and in order to impress the respondent further with the necessity of

¹ See C. A. A. OPINIONS—vol. I, temporary p. No. 115.

C.A.A. Opinions—Vol. I Temporary
Page No. LX

discharging his responsibilities more faithfully, it is necessary to suspend his certificate for a period of 90 days, and we find that such action is required in the public interest.

ORDER

The Civil Aeronautics Authority, upon the foregoing findings and conclusions and pursuant to section 205 (a) and section 609 of the Civil Aeronautics Act of 1938, orders that commercial pilot certificate No. 34505 issued to Howard F. Dutton of Montpelier, Vt., be, and the same is, suspended for a period of 90 days from the date of this order.

Hinckley, Mason, Warner, Members of the Authority, concurred in the above opinion and order. Branch and Ryan, Members, did not take part in the decision.

C.A.A. Opinions—Vol. I Temporary
Page No. LXI

SR-35

IN THE MATTER OF R. S. JOHNSON, HOLDER OF AIRCRAFT
AND AIRCRAFT ENGINE MECHANIC CERTIFICATE
NO. 3870

Decided March 1, 1940

APPEARANCES:

R. S. Johnson, in his own behalf

APRIL 1, 1940

ABSTRACTS

(Continued)

Order No. 422: American Airlines rate proceedings consolidated for hearing.

The Authority on March 8 consolidated into one proceeding for hearing, the matter of the compensation for the transportation of mail by aircraft of American Airlines, Inc. (instituted by the Authority), and the matter of the petition of American Airlines, Inc., for determination of fair and reasonable rates of compensation for the transportation of mail by aircraft on air-mail routes 4 and 23.

Order No. 423: Pan American Airways rate application assigned for public hearing.

The Authority on March 8 assigned for public hearing the application of Pan American Airways Co. (Delaware) for an order fixing and determining the fair and reasonable rate of compensation for the transportation of mail by aircraft on additional frequencies between the United States and Europe in trans-Atlantic service.

Order No. 424: Condor Air Lines denied convenience and necessity certificate under "grandfather" clause.

The Authority on March 8 denied application of Condor Air Lines, Inc., for a certificate of public convenience and necessity under the "grandfather" clause. (For full text of the order and opinion, see docket No. 23-401-E-1, p. 140.)

Order No. 425: Continental Airlines granted authorization for additional services.

The Authority on March 8 granted application of Continental Airlines, Inc., for an amendment to its certificate of public convenience and necessity for route No. 29 so as to authorize additional service between Albuquerque, N. Mex., and El Paso, Tex., via Roswell, Hobbs and Carlsbad, N. Mex. (For full text of opinion and order, see docket Nos. 265 and 285, p. 144.)

Order No. 426: Air Line Pilots Association granted permission to intervene.

The Authority on March 11 granted Air Line Pilots Association, International, permission to intervene in the application of Transcontinental & Western Air, Inc., for approval of a contract.

ABSTRACTS

(Continued)

Order No. 427: James Henry Layne, additional suspension of student pilot certificate.

The Authority on March 11 suspended for an additional 30 days from March 13, student pilot certificate No. 59350, held by James Henry Layne, Van Nuys, Calif., pending proceedings instituted to determine whether said certificate should be further suspended or permanently revoked (previous order No. 420).

Order No. 428: Richard G. Purcell, Jr., additional suspension of solo pilot certificate.

The Authority on March 11 suspended for an additional 30 days from March 11 solo pilot certificate No. 66666, held by Richard G. Purcell, Jr., Burbank, Calif., pending proceedings instituted to determine whether said certificate should be further suspended or permanently revoked (previous order No. 418).

Order No. 429: Violations referred to the Attorney General for judicial action.

The Authority on March 12 referred the following case to the Attorney General for judicial action under the Civil Aeronautics Act:

Carl G. Anderson, Burbank, Calif.—For failure, in approaching for a landing, to circle an airport to the left sufficiently to observe other traffic, and other violations of the Civil Air Regulations.

Order No. 430: Violation referred to the Attorney General for judicial action.

The Authority on March 12 referred the following case to the Attorney General for judicial action under the Civil Aeronautics Act:

Charles Odell Johnson, Houston, Tex.—For giving flight instruction without being possessed of an instructor's rating in violation of the Civil Air Regulations.

OPINION

BY THE AUTHORITY:

Upon the receipt of a report from a member of its inspection staff alleging acts of carelessness and incompetence in the inspection and repair of an aircraft by R. S. Johnson (hereinafter referred to as the "respondent"), the Authority, by order, suspended the aircraft and aircraft engine mechanic certificate held by the respondent for a period of 30 days¹ and by a subsequent order directed him to appear before an examiner of the Authority and show cause why his certificate should not be suspended or revoked.

These orders were based upon reported facts which indicated that the respondent had approved as airworthy aircraft NC 14348, a Piper Cub owned by him, and presented it to an inspector of the Authority for inspection and recertification when the aircraft was in an unairworthy condition by reason of numerous defects in the aircraft, including two cracked cylinder heads; that the inspector had subsequently certificated the airplane after these defects had been repaired and airworthy cylinder heads installed; and that the respondent, after the airplane had been certificated, authorized the reinstallation in the aircraft of the cracked cylinder heads.

Pursuant to notice a hearing was held in the matter before an examiner of the Authority in Houston, Tex., on January 23, 1940. The examiner filed his report on January 30, 1940, in which he found that the charges set forth in the order to show cause were sustained by the evidence received at the hearing and recommended that the respondent's mechanic certificate be revoked. The respondent was duly served with a copy of this report.

At the hearing oral testimony was received and documentary evidence introduced which would tend to prove the following facts.

¹ These proceedings having been pending at the expiration of the first 30-day period, the Authority suspended the respondent's certificate for an additional 30 days.

C.A.A. Opinions—Vol. I Temporary Page No. LXII

The respondent, who operates an airport in Houston, Tex., is the holder of an aircraft and aircraft engine mechanic certificate and owns a Piper Cub identified as NC 14348. The airworthiness certificate of the aircraft expired some time prior to November 20, 1939, and the respondent, with the assistance of Mr. Gordon Swann, who holds a financial interest in the aircraft, the respondent's son and others, had been making certain repairs to the aircraft prior to that date in order to secure an airworthiness certificate for it. On November 20, the respondent made the following entries in the log books of the aircraft and the aircraft engine installed therein:

[Aircraft Log Book]

"Plane completely refinished and new cables installed throughout. Total time, 1,249 hours to date. (Signed) R. S. Johnson, No. 3870, A & E Mechanic."

[Engine Log Book]

"One thousand four hundred and sixteen hours and thirteen minutes total time to date. Engine completely dismantled and checked. New connecting rod bearings installed and new piston rings. Valves ground, new cylinder head gaskets, magneto cleaned and checked. (Signed) R. S. Johnson, No. 3870, A & E."

On the evening of November 20, the respondent's son and Gordon Swann requested Inspector Condit of the Authority to call at the respondent's airport and inspect aircraft NC 14348. Mr. Condit began his inspection of the aircraft on November 21, 1939, but found that the gas lines were leaking at several different connection points and that there was considerable loss of compression in the left-hand cylinder head. Therefore he terminated his inspection at that time and directed Gordon Swann to have the left-hand cylinder head removed from the aircraft in order to permit a more careful inspection. At the time of this inspection the respondent was not present. The following day Mr. Condit returned and examined the left-hand cylinder head and found that it was badly cracked at both ends, and upon further examination of the engine found that the right-hand cylinder head showed a slight crack at one end. At the same time he inspected the aircraft further and found that there were three or four bent ribs in the left wing and that the rib stitching on three or four ribs on each side of the fuselage was broken. Thereupon he refused to renew the airworthiness certificate of the aircraft.

After the departure of Inspector Condit the respondent directed the removal of two cylinder heads from an aircraft similar to NC 14348 owned by a Mr. Crabbe, who had left his aircraft at the respondent's airport, and instructed his son and Mr. Swann to install these cylinder

C. A. A. Opinions—Vol. I Temporary
Page No. LXIII

heads in NC 14348. On November 25, 1939, the aircraft was again presented to Inspector Condit for inspection and he found that the defects in the aircraft had been repaired and that serviceable cylinder heads had been installed in the aircraft and therefore issued an airworthiness certificate for it.

A short time thereafter the cylinder heads which had been installed in the aircraft at the time of certification were removed for reinstallation in Mr. Crabbe's airplane and, according to Mr. Swann's testimony, the respondent authorized him to reinstall the cracked cylinder heads in NC 14348. On December 18, 1939, Inspector Condit saw Mr. Swann land NC 14348 at the Municipal Airport in Corpus Christi, Tex., and upon examination discovered that the damaged cylinder heads had been replaced in the aircraft.

In defense of the charges against him and in reply to the evidence described above, the respondent contended that he had not approved aircraft NC 14348 as airworthy and had not presented it for inspection by an inspector of the Authority because he had not completed his work on it. There is no evidence in the record of a formal presentation by the respondent of the aircraft for inspection, nor is there evidence of a direct statement by him that he approved the aircraft as airworthy. However, when all the facts and circumstances surrounding the inspection are considered, it can only be concluded that the respondent did present the aircraft for inspection and did approve it as airworthy. On November 20, the respondent entered certain repairs in the aircraft and engine log books and signed for them, thus indicating that he considered his work complete. On that same day his son and Mr. Swann requested an inspection of the aircraft. While the respondent was not present at the time Mr. Condit began his inspection, there is no evidence in the record that respondent protested at any time during the inspection that he had not completed his work on the aircraft and

ABSTRACTS

(Continued)

Order No. 431: Offers accepted in compromise of civil penalties for violations.

The Authority on March 12 accepted the following offers in compromise of civil penalties incurred for violations of the Civil Aeronautics Act of 1938 and the Civil Air Regulations.

Milford C. Hutchinson, Martins Ferry, Ohio.—For piloting an aircraft carrying a person other than a certificated instructor actually giving instruction, in violation of the terms of his student pilot certificate—\$50; and

Clyde Jay Kirk, Salt Lake City, Utah.—For piloting an aircraft on a civil airway without being possessed of a valid pilot certificate, and other violations—\$50.

Order No. 432: Violation referred to the Attorney General for judicial action.

The Authority on March 15 referred the following case to the Attorney General for judicial action under the Civil Aeronautics Act of 1938:

F. B. Newton, Houston, Tex.—For piloting an aircraft on a civil airway without being possessed of a pilot certificate and other violations of the Civil Air Regulations.

Order No. 433: Robert O. Allman ordered to show cause.

The Authority on March 15 directed Robert O. Allman, Overland, Mo., holder of commercial pilot certificate No. 28095 with flight instructor rating, to appear before an examiner of the Authority and show cause why this certificate should not be revoked or suspended for, while giving instruction to a student pilot, flying over a congested area at an altitude less than 1,000 feet.

Order No. 434: Eastern Air Lines, Inc., to intervene in application of Pennsylvania-Central Airlines Corporation.

The Authority on March 15 granted Eastern Air Lines, Inc., permission to intervene in the application of Pennsylvania-Central Airlines Corporation for an amendment to its certificate of public convenience and necessity for route No. 24, to provide for transportation of passengers, property, and mail between Baltimore, Md., and Atlantic City, N. J.

ABSTRACTS

(Continued)

Order No. 435: Transcontinental & Western Air, Inc., to intervene in application of Pennsylvania-Central Airlines Corporation.

The Authority on March 15 granted Transcontinental & Western Air, Inc., permission to intervene in the application of Pennsylvania-Central Airlines Corporation for an amendment to its certificate of public convenience and necessity for route No. 24, to provide for transportation of passengers, property, and mail between Baltimore, Md., and Atlantic City, N. J.

Order No. 436: Offer accepted in compromise of civil penalties for violations.

The Authority on March 15 accepted the following offer in compromise of civil penalties incurred for violations of the Civil Aeronautics Act of 1938 and the Civil Air Regulations:

Joe H. Ramaker, Great Falls, Mont.—For piloting an aircraft on a civil airway without being possessed of a valid pilot certificate, and other violations—\$100.

REGULATIONS

Regulation No. 65: Adopted amendment No. 42 of the Civil Air Regulations.

The Authority on March 1 adopted amendment No. 42 of the Civil Air Regulations prescribing that an applicant for a pilot certificate of competency, applying as a graduate of a course of flight instruction approved by the Civil Aeronautics Authority, shall accompany such application with a recommendation from the applicant's instructor.

Regulation No. 66: Reduced rate transportation for delegates to the Eighth American Scientific Congress.

The Authority on March 8 authorized Pan American Airways, Inc., and Pan American-Grace Airways, Inc., to issue reduced rate transportation for duly accredited delegates to the Eighth American Scientific Congress.

that inspection should not be continued. In fact, the evidence shows that he attempted to eliminate Mr. Condit's objection to the left-hand cylinder by peening over the crack and argued vigorously with Mr. Condit that the right-hand cylinder was not cracked.

The character of the entries in the log book should also be considered. The respondent stated in the aircraft log book that the plane had been completely refinished. It is obvious that if he intended to complete his work on the aircraft by repairing the bent ribs and the broken rib stitching, he would not have completely refinished the aircraft first. In addition, the engine log book shows that the engine had been completely dismantled and checked. It is also obvious that if he intended to complete his work on the engine by installing new cylinder heads, he would not have reassembled the engine first. All of these factors lead to the conclusion that the respondent approved aircraft NC 14348 as airworthy and presented it for inspection by an inspector of the Authority when the aircraft was unairworthy by reason of the defects heretofore set out.

C.A.A. Opinions—Vol. I *Temporary
Page No. LXIV*

The respondent also contended that he had not authorized Mr. Swann to reinstall the left-hand cylinder head which was unquestionably cracked at both ends. According to his testimony he had only authorized Mr. Swann to reinstall the right-hand cylinder head which he believed to be in serviceable condition, despite Inspector Condit's contrary opinion. He stated that he told Mr. Swann to purchase a new cylinder head to replace the left-hand head but to reinstall the one, the condition of which Mr. Condit had questioned, temporarily until it could be replaced.

In support of this assertion the respondent introduced in evidence an affidavit made by Mr. Swann in which he stated:

"On December 8, 1939, I personally removed from the garage of R. S. Johnson, and installed upon the said Cub airplane license number NC 14348 a damaged cylinder head and navigated such airplane from Houston, Tex., to Refugio, Tex. Such act and deed being purely of my accord and without the knowledge or authorization of the owner, Mr. R. S. Johnson."

After the introduction of this affidavit Mr. Swann was recalled to the stand and disavowed the statement made therein and affirmed his previous testimony to the effect that both of the damaged cylinder heads had been installed by him with the knowledge of, and after authorization by, the respondent.

If, as between the two contradictory statements made by Mr. Swann, the oral testimony at the hearing is to be relied upon, we are presented with directly conflicting statements made by Mr. Swann and by the respondent. Since it appears from the record that Mr. Swann made two statements under oath, which are directly contradictory, little reliance can be placed on either of them. Therefore, we hold that there is insufficient evidence in the record to sustain the charge that the respondent authorized the reinstallation of the badly cracked left-hand cylinder head but that the respondent's own testimony sustains the charge that the respondent authorized the reinstallation of the right-hand cylinder head.

From the entire record of the proceedings we find that the respondent approved as airworthy and presented for inspection by an inspec-

tor of the Authority an aircraft in which three or four ribs in the left wing were damaged, the rib stitching in three or four ribs on each side of the fuselage was broken, the fuel lines leaked, one of the cylinder heads in the engine was badly cracked at both ends and the other was at least in a questionable condition. We further find that the respondent, after having secured the renewal of the airworthiness certificate of the aircraft by repairing these defects and installing two serviceable cylinder heads, authorized the reinstallation of the questionable one in the aircraft, knowing that Inspector Condit had disapproved it.

These acts indicate such incompetence and gross carelessness on the part of the respondent in the inspection and repair of aircraft

C.A.A. Opinions—Vol. I Temporary
Page No. LXXV

that the interest of safety requires us to take action against his mechanic certificate. Section 609 of the Civil Aeronautics Act empowers us to revoke a mechanic certificate for any cause which, at the time of revocation, would justify the Authority in refusing to issue to the holder of such a certificate a like certificate. From the record of this case we find that there exists sufficient cause to justify the revocation of the aircraft and aircraft engine mechanic certificate of the respondent.

ORDER

The Civil Aeronautics Authority, upon the foregoing findings and conclusions and pursuant to section 205 (a) and section 609 of the Civil Aeronautics Act of 1938, orders that aircraft and aircraft engine mechanic certificate No. 3870, issued to R. S. Johnson, of Houston, Tex., be, and the same is, revoked.

Hinckley, Mason, Warner, Members of the Authority, concurred in the above opinion and order. Branch and Ryan, Members, did not take part in the decision.

C.A.A. Opinions—Vol. I Temporary
Page No. LXXVI

DOCKET NOS. 131 AND 232

NORTHWEST AIRLINES, INC., CERTIFICATE OF PUBLIC
CONVENIENCE AND NECESSITY

In the matter of the application of Northwest Airlines, Inc., for a certificate of public convenience and necessity under section 401 (d) (1) of the Civil Aeronautics Act of 1938.

Decided March 6, 1940

Applicant found entitled, under section 401 (d) (1) of the act, to a certificate of public convenience and necessity authorizing it to engage in air transportation with respect to mail, persons, and property between the terminal points St. Paul-Minneapolis, Minn., and Duluth, Minn.-Superior, Wis. Applicant found not entitled under the aforesaid section to a certificate of public convenience and necessity authorizing it to engage in air transportation between any of the other points for which authorization is sought in this proceeding.

APPEARANCES:

Francis D. Butler, for applicant.

Hubert A. Schneider and *George C. Neal* for Civil Aeronautics Authority.

APRIL 1, 1940

BY THE AUTHORITY:

Northwest Airlines, Inc., by application filed December 6, 1938, and amendment thereto filed January 6, 1939 (docket No. 131), and by application filed May 5, 1939 (docket No. 232), seeks certificates of public convenience and necessity under section 401 (d) (1) of the Civil Aeronautics Act of 1938. Authorization is sought to engage in scheduled air transportation of mail, persons, and property (1) between the terminal points Milwaukee, Wis., and Minneapolis-St. Paul, Minn., via the intermediate points Fond du Lac, Oshkosh, Green Bay, Wausau, Wis., and Superior, Wis.-Duluth, Minn. (hereinafter referred to as the "loop operation"), and (2) between the terminal points Milwaukee, Wis., and Marquette, Mich., via the intermediate points Fond du Lac, Appleton, Green Bay, Marinette, Wis., and Menominee and Escanaba, Mich. (hereinafter referred to as the "Milwaukee-Marquette application").

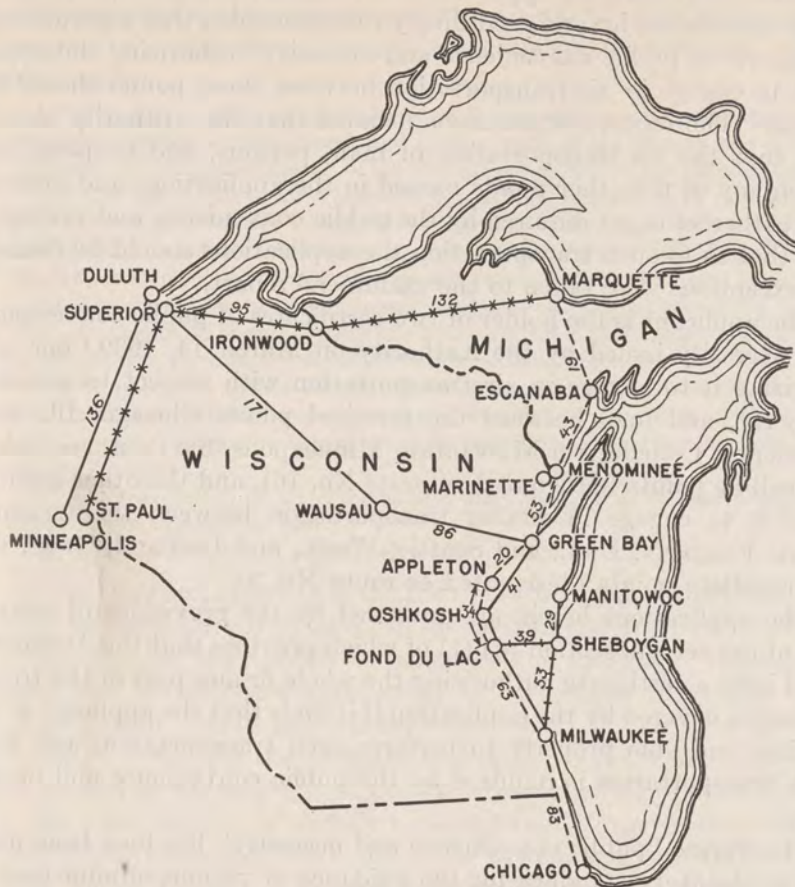
The above applications were consolidated into one proceeding by order of the Authority dated May 10, 1939, and assigned for hearing before an examiner. After due notice to the public and interested parties a public hearing on these applications was held on June 5

C.A.A. Opinions—Vol. I *Temporary
Page No. LXVII*

and 9, 1939, before Examiners Francis W. Brown and Lawrence J. Kusters of the Authority, and a memorandum brief was filed by the applicant.

Prior to the hearing the cities of Sheboygan and Manitowoc, Wis., filed separate motions for leave to intervene, each city alleging that the proposed Sheboygan-Manitowoc Airport should be included as an intermediate point on the routes with respect to which the applicant seeks authorization to engage in air transportation. Both motions were denied by the Authority on June 5, 1939, without prejudice to the right of each of the petitioners to make appearance and present evidence. Each city entered its appearance at the hearing in accordance with rule 4 (a) of the Rules of Practice.

At the hearing Northwest Airlines, Inc., amended its applications to include Sheboygan on both of the proposed routes as an additional intermediate point between Milwaukee and Fond du Lac or as an alternative intermediate point instead of Fond du Lac. The applications were also amended to provide, in the alternative, that the proposed route from Milwaukee to Marquette should be extended westerly along the south shore of Lake Superior to Duluth-Superior, with an intermediate stop at Ironwood, Mich., and thence south from Duluth-Superior to St. Paul-Minneapolis, in lieu of the proposed route from Milwaukee to St. Paul-Minneapolis via Green Bay, Wausau, Duluth-Superior, and other intermediate points. The applications were further amended at the hearing to extend the proposed routes from Milwaukee to Chicago, Ill., between which points operations are now conducted by the applicant as a part of route No. 16. The routes and alternative routes, for which authorization is sought to engage in air transportation, together with the mileages between, and the populations of, the various points thereon, are indicated on the following map:



LEGEND

- "Southern Loop Operation" — Docket No. 131
- "Chicago-Marquette Application" — Docket No. 232
- Alternate "Northern Loop Operation" in lieu of Southern Loop Operation
- Alternate Route — Milwaukee to Fond du Lac via Sheboygan

Population, 1930 Census

Chicago.....	3, 376, 438	Appleton.....	25, 267	Ironwood.....	14, 299
Milwaukee...	624, 243	Green Bay...	37, 415	Wausau.....	23, 758
Sheboygan...	39, 251	Marinette...	13, 734	Duluth.....	101, 463
Manitowoc...	22, 963	Menominee...	10, 320	Superior....	36, 113
Fond du Lac..	26, 449	Escanaba....	14, 524	Minneapolis..	464, 356
Oshkosh.....	40, 108	Marquette...	14, 789	St. Paul.....	271, 606

On December 22, 1939, the examiners' report was duly filed and served, recommending that the Authority find that the air transportation of mail, persons, and property between Duluth-Superior

APRIL 1, 1940

and St. Paul-Minneapolis is required by the public convenience and necessity and that the applicant is fit, willing, and able properly to perform such service and accordingly recommending that a permanent certificate of public convenience and necessity authorizing the applicant to engage in air transportation between those points should be issued. The report further recommended that the Authority should find that the air transportation of mail, persons, and property between any of the other points named in the applications and amendments thereof is not required by the public convenience and necessity and that as to such transportation the applications should be denied. No exceptions were taken to the examiners' report.

The applicant is the holder of two certificates of public convenience and necessity issued by the Authority on March 14, 1939,¹ one authorizing it to engage in air transportation with respect to persons, property, and mail between the terminal points Chicago, Ill., and Winnipeg, Canada, via Milwaukee, Minneapolis, St. Paul, and other immediate points (designated as route No. 16), and the other authorizing it to engage in similar transportation between the terminal points Fargo, N. Dak., and Seattle, Wash., and Portland, Oreg., via intermediate points (designated as route No. 3).

The applications herein are governed by the provisions of section 401 of the act, subsection (d) (1) of which provides that the Authority shall issue a certificate authorizing the whole or any part of the transportation covered by the application if it finds that the applicant is fit, willing, and able properly to perform such transportation and that such transportation is required by the public convenience and necessity.²

The phrase "public convenience and necessity" has long been used as the statutory standard for the guidance of various administrative bodies in connection with the regulation of public utilities. It has been universally recognized that the phrase is susceptible of no exact definition and that its meaning must be largely ascertained by reference to the context and objectives of the particular statute in which it is used. Although it is obvious that a fixed and rigid concept of the term, to be applied uniformly to every new route application, cannot be evolved by the Authority and that each application must be determined upon the basis of the particular circumstances surrounding the

¹ Northwest Airlines, Inc., docket No. 42-401-E-1, certificate of public convenience and necessity.

² Section 401 (d) (1) provides: "The Authority shall issue a certificate authorizing the whole or any part of the transportation covered by the application, if it finds that the applicant is fit, willing, and able to perform such transportation properly, and to conform to the provisions of this Act and the rules, regulations, and requirements of the Authority hereunder, and that such transportation is required by the public convenience and necessity; otherwise such application shall be denied."

C.A.A. Opinions—Vol. I *Temporary
Page No. LXX*

proposed new operation, certain sources of interpretation are, nevertheless, available which indicate the purpose of the phrase as used in the act and give some bounds to the problem for the guidance of the Authority in reaching its determination in each case. Two important sources are the "declaration of policy" of the act and two subsequent sections thereof (Sec. 406 (a) and (b) and sec. 302 (a)) relative to the financial responsibility of the Government resulting from the issuance of certificates for new routes.

Section 2, entitled "Declaration of Policy," directs the Authority, in the exercise and performance of its powers and duties under the act, to consider certain factors, among others, as being in the public interest and *in accordance with public convenience and necessity*. These factors are—

(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 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;

(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.

The declaration of policy of the act thus sets out the broad standards which the Authority is to apply to the facts of any given case in determining whether the "public convenience and necessity" requires the issuance of a certificate authorizing an air carrier to engage in air transportation over a new route. Obviously, in the light of these standards, it was not the congressional intent that the air transportation system of the country should be "frozen" to its present pattern. On the other hand, it is equally apparent that Congress intended the Authority to exercise a firm control over the expansion of air transportation routes in order to prevent the scramble for routes which might occur under a "laissez faire" policy. Congress, in defining the problem, clearly intended to avoid the duplication of transportation facilities and services, the wasteful competitive practices, such as the opening of nonproductive routes, and other uneconomic results which characterized the development of other modes of transportation prior to the time of their governmental regulation.

Furthermore, it must not be forgotten that the determination of the Authority relative to the issuance of a new route certificate

C.A.A. Opinions—Vol. I *Temporary*
Page No. LXXI

authorizing air transportation with respect to persons, property and mail involves as its necessary consequence a certain cost to the Government in the form of mail compensation. Under section 406 (b) of the act, mail rates are to be fixed in the light of the objectives of the act, which, among other things, include 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.

Moreover, the Government's financial responsibility may not be limited to the direct payments which may be made for services in carrying the mail. Indirectly, the establishment of a new route has commonly resulted in the past, and may be expected frequently to result in the future, in the designation and establishment by the administrator of a civil airway and the construction and maintenance of

appurtenant air navigation facilities pursuant to title III of the act. Thus, if the operation of a proposed route appears only to be required by the public interest in the event that air navigation facilities are installed, it is incumbent upon the Authority to consider the cost of the installation and operation thereof in connection with the granting of a new route certificate. If, on the other hand, it appears that a proposed service is required by the public interest even though it is only to be operated on a day-time contact basis, it is unnecessary to weigh the cost to the Government incident to the installation and operation of air navigation facilities in connection with the determination of the requirements of the public convenience and necessity.

Although it is apparent that the benefit to be derived from the installation and maintenance of any facilities which might later be established would not be enjoyed exclusively by the air carrier to whom a new route certificate was issued but would be shared, in varying degree, by military and other types of fliers as a part of a national airway system, a proper portion of the cost to the Government of these facilities must be considered in those cases where the proposed service appears only to be required by the public interest in the event that air navigation facilities are installed. It is obvious, however, that as the technique of flight progresses it may develop that the installation of fewer of such aids will be required and that as a result the possible cost to the Government incident to the establishment of a new route will be substantially reduced. Any conclusions, therefore, with respect to the present costs of such facilities must necessarily be regarded with reserve.

The Authority, in determining whether the inauguration of a new service will result in carrying out the objectives of the act as set forth in the declaration of policy, must consequently consider not only the need of the particular community or section for the proposed operation but also the relationship which such service bears to the

C.A.A. Opinions—Vol. I Temporary
Page No. LXXII

development of a nationally adequate and economically sound air transportation system from the broad standpoint of the Postal Service, commerce, and the national defense. Furthermore, this determination must be made in the light not only of the cost to the public incident to the inauguration and operation of the service but also of the regulation of the expansion of the industry at a crucial period of its development in a manner which will not only foster sound economic conditions in air transportation at the present time but also in the future. One of the factors directly related to the interests of the public and to the economic welfare of the industry is the relationship between the estimated commercial revenues and operating costs of the proposed service. It is our belief that unless exceptional circumstances, such as the particular importance of a route from the standpoint of the national defense, exist in a given case, this relationship should not initially impose upon the Government an unduly large proportion of the total operating cost. Conditions surrounding the operation of any service receiving a certificate should also be such as to justify an anticipation that commercial revenues will show a continuing tendency to increase, with a consequent progressive decrease in the degree of the carrier's dependence on the Government. However, in gauging the commercial revenue potential of a proposed

route it is apparent that its establishment, like the inauguration of steamboat and railroad service in earlier days, and the use of the automobile, will serve as a means for the development of the communities and the areas which may be served, and that it may well result in an accentuation of the passenger, express, and mail traffic of the particular section in question.

The examiner's report, as previously stated, recommended that the application for the proposed route from Chicago to Marquette should be denied, and no exceptions were taken by the applicant. The route in question, which may be characterized as a "spur line" to the northern peninsula of Michigan and to the Wisconsin communities along the western shore of Lake Michigan, involves 306 route miles which extend into an area which does not now enjoy any air transportation facilities.³ For the purpose of analysis the proposed operation can be readily divided into two segments, that from Milwaukee to Green Bay through the thickly populated and highly industrialized Fox River Valley section, and that from Green Bay northward to Marquette through a comparatively sparsely settled and undeveloped territory. Approximately 75 percent of the population of the cities which are proposed to be served between Milwaukee and Marquette is centered in the Fox River Valley, while the remaining 25 percent is found in the cities north of Green Bay. The

³ This route mileage would be reduced to 275 miles if Sheboygan were not included as an intermediate point between Milwaukee and Fond du Lac.

C.A.A. Opinions—Vol. I *Temporary
Page No. LXXIII*

population of these cities for the years 1920, 1930, and 1939, and the mileages involved between the points on the proposed route are shown by the following tabulation:

CITIES	POPULATION			MILEAGE	
	1920	1930	1939	Miles	Cumulative
<i>(Estimated)</i>					
Sheboygan...	30,955	39,251	43,000	53 from Milwaukee	136 from Chicago.
Fond du Lac...	23,427	26,449	27,000	39 from Milwaukee	175 from Chicago.
Appleton.....	19,561	25,267	28,000	35 from Milwaukee	210 from Chicago.
Green Bay....	31,017	37,415	45,000	22 from Milwaukee	232 from Chicago.
Subtotal....			143,000		
Marinette....	13,610	13,734	13,000	53 from Milwaukee	285 from Chicago.
Menominee...	8,907	10,320	10,000		
Escanaba....	13,103	14,524	15,000	43 from Milwaukee	328 from Chicago.
Marquette....	12,718	14,789	15,000	61 from Milwaukee	389 from Chicago.
Subtotal....			53,000		
Grand total..			196,000	306	

Between Chicago and Milwaukee the proposed route would duplicate air transportation service which is presently performed between those

points over applicant's route No. 16. The reason which is given by the applicant for this duplication is that as a practical operating matter it would be necessary to terminate the proposed route at Chicago rather than Milwaukee because of maintenance and servicing facilities at the former point.

It is apparent from the above tabulation that the need for air transportation facilities, as measured by units of population, and volume of passenger traffic which may be expected to be developed along the route vary widely between the southern and northern segments thereof. However, there are other factors which relate to the public convenience and necessity in considering the inauguration of air transportation service. One of these factors is the traffic flow in the particular area and the community of interest and trade relationship between the points to be served by the proposed operation. It is significant with respect to the north-south Milwaukee-Marquette route that the principal movement of traffic to and from the Fox River Valley cities is to the south, with a close community of interest

C.A.A. Opinions—Vol. I *Temporary
Page No. LXXIV*

and trade relationship between those cities and Milwaukee and Chicago, and that the traffic flow from the area north of Green Bay, exclusive of the heavy freight which moves via the Lakes, is also south through Green Bay to Milwaukee and Chicago. The north-south flow of traffic in the area in question is indicated by the rail passenger travel figures for the year 1933 as contained in the report of the Federal Coordinator of Transportation:

TO-----	{ Appleton Oshkosh Fond du Lac	Green Bay	Duluth	St. Paul Minneap- olis	Milwau- kee	Chicago
FROM—						
Appleton----	}-----	3, 057	257	1, 157	15, 622	48, 587
Oshkosh-----						
Fond du Lac---						
Green Bay----	2, 540	-----	47	695	5, 523	21, 028
Milwaukee----	17, 234	7, 959	1, 535	12, 921	-----	179, 567
Chicago-----	16, 578	8, 229	7, 342	60, 398	94, 602	-----

Another factor which must be considered in determining the need for air transportation service and the passenger traffic potential of a given area is the adequacy of existing transportation facilities in the particular section. It appears that the Fox River Valley cities are adequately served by rail and bus connections to Milwaukee, the nearest existing air-line stop, and Chicago, and that little saving in time would result from the inauguration of the proposed operation. At the present time the distance from Green Bay to Chicago can be negotiated by rail in approximately 3 hours and 40 minutes while the estimated plane time under the schedules which are proposed by the applicant is 2 hours and 20 minutes. The comparison between existing rail service and the proposed air service between the other Fox River Valley cities and Chicago is proportionately similar. On the other hand, the rail service to the cities on the northern segment of the pro

posed route is slow and infrequent. Only two trains operate daily in each direction north of Green Bay, and there is no direct rail service from Marquette to the south, it being necessary to go 10 miles by bus or car to Ishpeming in order to entrain for Milwaukee and other southern points.

The fastest available train from Ishpeming requires approximately 11 hours for the trip to Milwaukee, so that the proposed 3-hour air schedule between Milwaukee and Marquette would result in a saving of approximately 8 hours over the time which is now required for the journey by rail. In view of the inadequacy of existing transportation facilities in the northern peninsula and the time which would be

C.A.A. Opinions—Vol. I Temporary
Page No. LXXV

saved by air-line travel, it is reasonable to conclude that a greater proportion of air passenger traffic would be produced per unit of population from the cities along the northern section of the route than from the Fox River Valley segment and that to such extent the greater concentration of population in the latter area would be offset by the relative inaccessibility of the northern peninsula.

The need for the inauguration of an air transportation service which involves the carriage not only of persons and property, but also of mail, necessarily requires consideration by the Authority of existing postal service facilities in the area in question and the probable postal revenues to be derived from the operation of the proposed new route. The amount of annual postal receipts which are derived from the cities to be served by the Milwaukee-Marquette operation and the daily volume of first-class mail which originates and is received at the offices in question vary widely between the southern and northern segments of the route. The 1938 postal receipts of the cities on the proposed route, the estimated average daily volume of first-class mail, and the total air mail dispatched and received during a 6-day count in May of 1939 are indicated by the following table:

	1938 postal receipts	1938 estimated average daily vol- ume, pieces, first- class mail		Air mail received and dis- patched May 22-27, 1939, inclusive		
		Originates	Received	Pieces	Weight	Approximate weight per day
					<i>Pounds</i>	<i>Pounds</i>
Fond du Lac.....	\$184, 163	13, 700	15, 000	1, 157	42	7
Oshkosh.....	248, 275	19, 500	20, 500	2, 134	81	13
Appleton.....	213, 726	15, 000	23, 000	1, 783	77	13
Green Bay.....	358, 034	49, 000	65, 000	2, 305	92	15
Subtotal..	1, 004, 198	97, 200	123, 500	7, 379	292	48
Marinette.....	72, 908	6, 460	7, 000	362	13	2
Menominee.....	55, 359	5, 100	5, 500	438	20	3
Escanaba.....	72, 361	11, 200	8, 400	371	16	2½
Marquette.....	88, 541	6, 000	10, 500	534	21	3½
Subtotal..	289, 169	28, 760	31, 400	1, 705	70	11

The record indicates that the existing air mail service to and from Green Bay and the other Fox River Valley cities is excellent through a combined train and plane service. Mail can be dispatched by train from these points from midafternoon to late afternoon for next-morn-

C.A.A. Opinions—Vol. I Temporary
Page No. LXXVI

ing delivery in New York, Los Angeles, and Seattle, while mail dispatched from points north of Green Bay in the morning makes plane connection at Chicago for similar delivery. Evening mail from all of the points on the proposed route connects at Chicago the next morning for afternoon delivery in New York. On overnight air mail from New York and other eastern points delivery is possible at Fond du Lac and Oshkosh on first morning delivery, at Appleton and Green Bay for the second delivery, at Marinette, Menominee, and Escanaba for afternoon delivery, and at Marquette for the first delivery on the second morning.

The inauguration of air-mail service over the proposed route on a day-time contact basis would result in improvement in existing Postal Service with respect to incoming mail to Marquette and outgoing mail from Marquette, Escanaba, and Marinette-Menominee. Marquette would benefit to the extent that on overnight air mail from New York and other eastern points afternoon delivery would be possible rather than second-morning delivery, while mail could be dispatched from Marquette at 2:30 p. m. and from Escanaba and Marinette-Menominee in midafternoon as compared to present dispatch from Marquette at 8:30 the preceding evening and from Escanaba and Marinette-Menominee by the middle of the morning. It is apparent, therefore, that with the exception of Marquette which showed postal receipts of \$88,541 for the calendar year 1938 and which has a relatively small volume of first-class mail per day, no substantial benefit from the point of view of improvement of the existing mail service would be realized from the operation of the proposed Milwaukee-Marquette route.

The applicant estimates the cost of operating the proposed route with Lockheed 10A equipment at 50 cents per airplane-mile for the first year of operation. Its direct operating cost with this type of equipment over its entire system was 28½ cents per mile for the period from January 1, 1939, to the date of the hearing, while its indirect flying cost and other expenses for the same period totaled 22.7 cents, resulting in a total system cost per mile of 51.2 cents. In view of its actual experience with the type of equipment in question it was conceded by the applicant that its estimate of 50 cents per mile for its first year of operation of the proposed route was conservative. It is significant to note in this connection that in the appendix to its memorandum brief applicant estimates its operating costs for the proposed route at 63 cents per airplane mile for the first year of operation and that the estimates in the appendix are stated to represent what the applicant will show in its application for the fixing of mail rates for the route in question.

The applicant estimates that the load factor on the proposed route would be 38 percent for the first year, or 3.8 passengers per revenue

mile, with passenger revenues of \$35,212. The record indicates that its load factor estimate is based upon its experience over its present system in connection with operations of a similar nature involving frequent stops at cities of corresponding size. Again it should be noted that in the appendix to its memorandum brief applicant estimates a load factor for the proposed route of 25 percent for the first year of operations.

In view of applicant's substantial upward revision of its operating expense forecast and downward revision of its passenger revenue estimate, it is believed that its forecast of a mail rate of 35 cents per mile is exceedingly conservative. In this connection it is to be noted that the applicant bases its computations in its application with respect to revenues to be received from the proposed route upon an assumed mail rate of 45 cents per mile and that in its memorandum brief it estimates its break-even mail pay requirement for the operation between Milwaukee and Marquette at 53 cents per mile. If it be assumed that a mail rate of 50 cents would be found to be fair and reasonable, the expenditure by the Government in the form of air-mail compensation, on the basis of applicant's 95-percent forecast of performance for the proposed daily round trip between Chicago and Marquette via Sheboygan would be approximately \$140,000 annually. If it were found practicable to maintain adequate services at materially below the unit costs estimated by the applicant, the aggregate need for mail compensation would, of course, be reduced accordingly.

No air navigation facilities presently exist on the proposed route north of Milwaukee, and since, therefore, any operations between that point and Marquette would necessarily be restricted to daylight contact operation as proposed by applicant, our determination with respect to the requirements of the public convenience and necessity under such circumstances need not take into consideration the costs incident to the installation and maintenance of air navigation facilities. If, however, such facilities were to be installed, it is apparent not only that the degree of public use to be derived from the service might be expected to be increased but also that the present cost of their construction and maintenance would have to be weighed in connection with any determination as to the requirements of the public convenience and necessity.

The record indicates that the cost of installing field lighting equipment, on the basis of average cost of installation, would amount to approximately \$395 per mile, or in excess of \$120,000 for the 309 new route miles in question. In addition, radio stations would be required at Sheboygan, Green Bay, Escanaba, and Marquette at a cost of approximately \$162,000, resulting in a total capital outlay by the Government of approximately \$282,000 for the proposed route. The annual cost of operating and maintaining these facilities, without

allowance for depreciation or interest charges, would approximate \$220 per mile or a total annual expenditure by the Government of approximately \$68,000.

We find that the need for air transportation over that portion of the proposed route between Milwaukee and Green Bay has not been suf-

ficiently established by the evidence of record. The sparsity of the presentation made by the applicant on the economic characteristics of this region was striking. Comparative data which would have seemed of obvious pertinence were omitted from the record, and neither the applicant nor the representatives of the communities appearing as witnesses provided material on the basis of which there could be a finding that the air transportation for which authorization was sought was required by the public convenience and necessity. The same observations apply to the portion of the proposed route lying between Green Bay and Marquette. Although there was evidence of inadequacy of existing means of transportation, of a substantial saving of time to be effected by air travel, and of a resultant improvement in existing mail service to certain communities, no adequate presentation was made with respect to the use which these communities might be expected to make of air carrier service if it were provided.

The examiner's report further recommended that the application for the so-called loop operation from Milwaukee to the Twin Cities via Fond du Lac, Oshkosh, Green Bay, Wausau, and Duluth-Superior should be denied, with the exception of that part of the route from Duluth-Superior to the Twin Cities. No exception was taken by the applicant to this recommendation. In its original application the so-called loop operation for which authorization is sought extended northward from Milwaukee via the Fox River Valley to Green Bay, thence in a northwesterly direction via Wausau to Duluth-Superior, and from there southward to the Twin Cities. At the hearing the applicant amended its application to extend the proposed route from Milwaukee to Chicago and to provide, in lieu of the loop operation, for an alternative route of approximately 748 miles from Chicago to the Twin Cities via Marquette, Ironwood, and Duluth-Superior. The record contains little evidence bearing on the proposed alternative operation, and we find a lack of any substantial evidence that the public convenience and necessity require such service.

The loop operation, as originally proposed via Wausau, duplicates between Chicago and Green Bay the proposed service on the Chicago-Marquette route, except that a stop is proposed at Oshkosh on the loop operation in lieu of Appleton. Although our findings with respect to the Fox River Valley segment of the Chicago-Marquette route necessarily apply to the same segment of the so-called loop operation, it remains to be determined whether the extension of the latter route from Green Bay to the Twin Cities via Wausau and

C.A.A. Opinions—Vol. I Temporary
Page No. L XXIX

Duluth-Superior alters the fact situation with respect to public convenience and necessity to a sufficient degree to require a different conclusion with respect to the inauguration of air transportation service over the proposed loop operation.

The line from Green Bay to Duluth-Superior involves 257 route miles over a sparsely settled section of Wisconsin with only one intermediate stop at Wausau. Wausau, which is located in the center of Wisconsin, 86 miles northwest of Green Bay and 171 miles southeast of Duluth-Superior, had a 1930 population of 23,758 which had grown to an estimated 25,000 in 1939. The principal movement of traffic from this area is southeastward to Milwaukee and Chicago,

the record showing little community of interest between Wausau and Duluth-Superior or the Fox River Valley Cities. There is no direct rail service between Wausau and Green Bay, Milwaukee, or Chicago, and most of the travel between those points is by bus or private automobile. The postal receipts for Wausau for the year 1938 totaled \$215,779.

The principal importance of the proposed loop operation lies in the fact that it would provide air transportation service to Duluth-Superior from the Twin Cities and from Milwaukee and Chicago. Duluth is an important port on Lake Superior, with a 1930 population of 101,463 persons and an annual trade for the year 1935 aggregating \$157,000,000. Superior, Wis., which is adjacent to Duluth, had a 1930 population of 36,113. In the neighboring counties there is a total population of more than 300,000, exclusive of the metropolitan populations of the two cities in question.

The traffic movement from Duluth-Superior is predominantly southward to the Twin Cities, the record showing a total of 18,095 local passengers traveling by rail between Duluth and the Twin Cities in 1933. On the other hand, no substantial community of interest or movement of traffic appears to exist between Duluth-Superior and the Fox River Valley cities. The flow of traffic is indicated by the rail passenger travel figures for the year 1933 as compiled from the Passenger Traffic Report of the Federal Coordinator of Transportation:

C.A.A. Opinions—Vol. I Temporary
Page No. LXXX

TO-----	Duluth	St. Paul Minneapolis	Appleton Oshkosh Fond du Lac	Green Bay	Mil- waukee	Chicago
FROM—						
Duluth-----		18,095	137	103	969	16,409
St. Paul-----	} 28,288		1,143	783	8,135	151,297
Minneapolis---						
Appleton-----	} 257	1,157		3,057	15,622	48,587
Oshkosh-----						
Fond du Lac---						
Green Bay---	47	695	2,540		5,523	21,028

Although the relatively small volume of trade which presently exists between Duluth and the Fox River Valley area was recognized at the hearing, it was urged that the inauguration of air transportation service over the proposed route would enable Duluth to compete with Milwaukee and Chicago for the business of the cities in the Fox River Valley. However, in view of the close proximity and ready accessibility of Milwaukee and Chicago to this area and the established trade relations which exist between these communities, it is highly conjectural whether any substantial volume of traffic could be developed between Duluth and the Fox River Valley cities as the result of the inauguration of the proposed service.

The need for air transportation service to Duluth-Superior and the traffic potential of that area is emphasized by the inadequacy of existing transportation facilities. Only 3 trains operate daily in each direction between Duluth and Chicago, averaging approximately

35 miles per hour and requiring almost 13 hours for the trip. Between Duluth and Milwaukee 2 passenger trains are operated daily south-bound and 1 train daily north-bound. Both south-bound trains arrive in Milwaukee at 5:40 a. m., one requiring 12 hours and 40 minutes, the other 9 hours and 25 minutes, respectively, for the trip, while north-bound it is necessary for a passenger to board the train at 1 a. m. with no Pullman facilities available. There is no direct passenger service by train between Duluth and the Fox River Valley cities, with the exception of 1 train daily to and from Fond du Lac, which averages approximately 32 miles per hour. Although 5 railroads run between Duluth and the Twin Cities, only 6 trains are operated daily in each direction, as contrasted with the 13 trains which were operated daily in 1935. With the exception of one 3-hour train each way between these points, the time required for the trip averages approximately 5 hours. In addition to rail travel there is a heavy movement of bus and automobile traffic to and from Duluth.

C.A.A. Opinions—Vol. I *Temporary
Page No. LXXXI*

Due to the inadequacy of rail facilities, the bulk of the passenger traffic to Wausau, the Fox River Valley cities, and Milwaukee moves by bus. There are 2 buses daily in each direction between Duluth and Chicago, 1 of which goes via the Fox River Valley cities, and 5 buses each way daily between Duluth and the Twin Cities.

The postal receipts for Duluth and Superior for the calendar year 1938 were \$740,810 and \$153,489, respectively, with an estimated average daily volume of first-class mail originating at Duluth-Superior of approximately 61,000 pieces, and an estimated average daily volume being received at these offices of approximately 99,000 pieces. A 6-day check of the air mail which was handled at these points between May 22 and May 27, 1939, disclosed that 6,720 pieces, the equivalent of 230 pounds, of mail were received and dispatched at the Duluth post office, and that 1,038 pieces, or 38 pounds, were received and dispatched at the Superior post office. The average air mail per day which was received and dispatched at both post offices during this period was 45 pounds.

Duluth now has 24-hour air-mail service to and from both coasts by means of the existing combined train and plane service. Mail leaving New York on a plane departing at 3:15 p. m. is delivered in Duluth the next morning, while mail leaving Duluth by train as late as 4:30 p. m. reaches New York for next morning delivery. Between Duluth and the Fox River Valley cities the mail service is slow due to the inadequacy of existing transportation facilities. Mail between these points is routed via Milwaukee and requires between 10 and 12 hours for the trip. The record, however, does not indicate that there is any substantial volume of mail between these points or that the service would be improved to any marked degree by operations over this territory without air navigation facilities.

The applicant's estimates of operating costs and anticipated revenues from all sources for the loop operation are computed upon the same basis as those for the route from Chicago to Marquette. However, in the appendix to its memorandum brief applicant revises its passenger load factor downward from 38 to 25 percent for the first year of operations, with the result that its break-even mail pay

requirement is increased from 35 cents to approximately 40 cents. Even if applicant's original estimate of a mail rate of 35 cents per mile is accepted, the annual cost to the Government in the form of air mail compensation, on the basis of applicant's 95 percent forecast of performance on the one daily round trip, would amount to approximately \$152,000. In addition, if air navigation facilities were to be installed on the proposed route, the increased public use which might be expected to be derived from the service would necessarily have to be weighed against the substantial cost to the Government incident to their construction and maintenance. The cost of installing field

C.A.A. Opinions—Vol. I *Temporary
Page No. LXXXII*

lighting equipment on the loop operation at approximately \$395 per mile, and necessary radio stations at Duluth, Wausau, Green Bay, and Sheboygan would involve a capital expenditure by the Government of approximately \$350,000. The annual cost of maintenance of these facilities, without allowance for depreciation or interest charges, would be approximately \$195 per mile, or \$105,000 in addition to the estimated annual expenditure of approximately \$152,000 in the form of air-mail compensation.

The line from Duluth-Superior southeast via Wausau and Green Bay would provide a direct service to Milwaukee and Chicago, a distance of 406 miles and 489 miles, respectively. Under the proposed schedules of the applicant the trip would require 3 hours and 15 minutes to Milwaukee and 4 hours to Chicago, a substantial saving over the existing rail schedules. However, a connecting service to Milwaukee and Chicago may be obtained by the operation of a route from Duluth-Superior to the Twin Cities, the distances by this route being 444 and 527 miles, respectively. By means of this connection with applicant's route No. 16 the cities of Duluth and Superior would be afforded air transportation service to Milwaukee and Chicago which would effect a saving of approximately 8 hours over the best available rail schedule between these points.

Although the whole of the air transportation for which authorization is sought may not be found to be required by the public convenience and necessity, section 401 (d) (1) of the act provides that any part of such air transportation may be authorized if it is found to be so required and if the applicant is fit, willing, and able properly to perform such transportation. A route between Duluth-Superior and the Twin Cities, involving only 136 new route miles, would connect two large industrial centers between which there is a close community of interest and heavy volume of traffic. In view of this fact it seems reasonable to believe that applicant's estimate of a 38 percent load factor or 3.8 persons per revenue mile for the entire loop operation will be more than realized on the segment of the route in question. However, it is to be noted in this connection that applicant in the appendix to its memorandum brief revises its passenger load factor downward to 30 percent for the first year of operation of its one daily round trip between Duluth and the Twin Cities. In addition, it increases its operating cost forecast to 55 cents, with the result that it estimates its break-even mail pay requirement at 43 cents per mile. Even if it be assumed that a mail rate of 40 cents should be found by the Authority to be fair and reasonable, a cost of only \$38,385, on the basis of

applicant's 96.66 percent forecast of performance, is indicated for the carriage of a substantial daily poundage of mail. In addition, if the public use to be derived from the new route were to be increased by the installation of air navigation facilities, the record indicates that

C.A.A. Opinions—Vol. I Temporary
Page No. LXXXIII

the present cost of their construction and maintenance would be relatively small. The cost of installing field lighting equipment at \$395 per mile and a necessary radio station at Duluth would appear to involve a total capital expenditure by the Government of approximately \$98,000, while the annual cost of maintenance of these facilities, without allowance for depreciation or interest charges, would approximate \$23,000.

Operations between Duluth-Superior and the Twin Cities could be economically conducted by the applicant since its maintenance base is located at St. Paul and no reserve equipment would be required. In addition, the inauguration of air transportation service between these terminals would improve applicant's general economic position in that passengers moving to Chicago and Milwaukee from Duluth-Superior via the Twin Cities would bring additional revenue to its present route. Furthermore, a line from Duluth-Superior to the Twin Cities would act as a feeder to the applicant's main line to the west as well as to Chicago. In 1933, 18,057 persons traveled by rail from Duluth to points in the northwest section of the United States. Of this total, 5,941 persons were destined for points west of Minnesota and as such would probably be routed through the Twin City gateway.

It is concluded that the extension of the so-called loop operation from Green Bay to the Twin Cities via Wausau and Duluth-Superior does not alter the fact situation with respect to the Fox River Valley segment of the proposed route to sufficient degree to require a different conclusion from that which has already been reached with respect to the same segment of the proposed Chicago-Marquette operation. Furthermore, in view of the relatively small traffic movement and community of interest between Duluth-Superior, Wausau, and the Fox River Valley cities, and the small passenger and mail revenue potentials as indicated by the record, it is concluded that the benefit to the particular communities and the Nation which might be derived from the inauguration of air transportation service between Green Bay and Duluth-Superior via Wausau is not sufficient at the present time to justify the assumption by the Government of the substantial cost incident thereto. On the other hand, the large populations of Duluth and Superior, the heavy traffic movement between that area and the Twin Cities, their established community of interest and trade relationship, and the inadequacy of existing transportation facilities indicates that substantial passenger and mail revenues will be realized from the inauguration of air transportation service between Duluth-Superior and the Twin Cities and that the benefit which will result therefrom to the particular communities in question and to the nation will justify the assumption by the Government of the relatively small cost thereof.

Prior to the issuance of a certificate authorizing air transportation which is found to be required by the public convenience and necessity, it is necessary for the Authority under section 401 (d) (1) of the act to find that the applicant is "fit, willing, and able to perform such transportation properly and to conform to the provisions of this act and the rules, regulations, and requirements of the Authority hereunder."

The applicant in this proceeding is the operator of a transcontinental route between the terminal point Chicago, Ill., and the terminal points Seattle, Wash., and Portland, Oreg., holding certificates of public convenience and necessity authorizing such operations. The record shows that the applicant would not require additional capital, or need to make substantial expenditures, in order to conduct operations over the proposed routes and that Lockheed 10A aircraft which are now owned by it would be available for the new service. We find, therefore, that the applicant is fit, willing, and able to perform the proposed transportation properly and to conform to the provisions of the act and the rules, regulations, and requirements of the Authority.

On the basis of the above findings of fact it is found that the public convenience and necessity, as set forth in section 401 (d) (1) of the act and as defined by the declaration of policy, require air transportation between St. Paul-Minneapolis, Minn., and Duluth, Minn.-Superior, Wis., and that the applicant is fit, willing, and able to perform such transportation properly. On the basis of the record herein the Authority is unable to find that air transportation between any of the other points for which authorization is sought is required by the public convenience and necessity.

An appropriate order will be entered authorizing the issuance of a certificate of public convenience and necessity for applicant to engage in air transportation with respect to persons, property, and mail between the terminal points St. Paul-Minneapolis, Minn., and Duluth, Minn.-Superior, Wis., and otherwise denying the applications, as amended.

Hinckley, Branch, Ryan, Mason, Warner, Members of the Authority, concurred in the above opinion.

ORDER

Northwest Airlines, Inc., having filed applications, and amendments thereto, for certificates of public convenience and necessity under section 401 (d) (1) of the Civil Aeronautics Act of 1938; a full hearing thereon having been held; and the Authority upon consideration of the record of such proceedings having issued its opinion containing its findings, conclusions, and decision, which is attached hereto and made a part hereof; and finding that its action in this matter is necessary pursuant to said opinion:

IT IS ORDERED, That there be issued to Northwest Airlines, Inc., a certificate of public convenience and necessity authorizing it, subject to the provisions of

such certificate, to engage in air transportation with respect to persons, property, and mail between the terminal point St. Paul-Minneapolis, Minn., and the terminal point Duluth, Minn.-Superior, Wis.

IT IS FURTHER ORDERED, That the exercise of the privileges granted by said certificate shall be subject to the terms, conditions, and limitations prescribed

by regulation 401-F-1 issued by the Authority on February 24, 1939, all amendments thereto, and such other terms, conditions, and limitations as may from time to time be prescribed by the Authority.

IT IS FURTHER ORDERED, That said certificate shall be issued in the form attached hereto and shall be signed on behalf of the Authority by the Chairman of the Authority and shall have affixed thereto the seal of the Authority attested by the Secretary. Said certificate shall be made effective from the 6th day of March 1940.

IT IS FURTHER ORDERED, That, except as to the air transportation with respect to persons, property, and mail to be authorized by said certificate, the applications herein of Northwest Airlines, Inc., as amended, for certificates of public convenience and necessity authorizing it to engage in air transportation with respect to persons, property, and mail be and the same are denied.

C.A.A. Opinions—Vol. I Temporary
Page No. LXXXVI

DOCKET No. 23-401-E-1

CONDOR AIR LINES, INC., CERTIFICATE OF PUBLIC
CONVENIENCE AND NECESSITY

In the matter of the application of Condor Air Lines, Inc., for a certificate of public convenience and necessity under section 401 (e) (1) of the Civil Aeronautics Act of 1938.

Decided March 8, 1940

Applicant found not entitled to a certificate of public convenience and necessity under section 401 (e) (1) of the Civil Aeronautics Act of 1938. Application denied.

APPEARANCES:

Edwin G. Wilcox, for applicant.

Eugene D. Bennett, Paul M. Godehn, Frank E. Quindry, and Felix T. Smith, for United Air Lines Transport Corporation, intervener.

Hubert A. Schneider, for Civil Aeronautics Authority.

OPINION

BY THE AUTHORITY:

By application filed October 17, 1938, Condor Air Lines, Inc., seeks a certificate of public convenience and necessity under section 401 (e) (1) of the Civil Aeronautics Act of 1938. Authorization is sought by the applicant to engage in scheduled air transportation of persons and property between the terminal points Alameda, Calif., and Monterey, Calif., via the intermediate points San Francisco and Salinas, Calif.

The application was filed within the statutory period, and due notice thereof was given to the public and to the air carriers included in a list issued by the Authority. By order dated August 8, 1939, the Authority permitted United Air Lines Transport Corporation to intervene in the proceeding. A public hearing was held before Examiner C. Edward Leasure of the Authority.

At the opening of the hearing, counsel for the intervener moved that the proceeding be dismissed for want of jurisdiction on the grounds that the application indicated that the applicant was neither an air carrier nor engaged in air transportation as defined by the terms and provisions of the Civil Aeronautics Act. This motion was denied. At the close of the hearing, counsel for the intervener again moved to

dismiss the proceeding on the ground that the Authority had no jurisdiction. This motion was also denied.

C.A.A. Opinions—Vol. I Temporary
Page No. LXXXVII

The examiner's report was duly filed and served. Prior to the service of this report, memorandum briefs were filed by the applicant and the intervener. Under the Authority's procedure, an opportunity was given for taking exceptions to the examiner's report. Counsel for the applicant filed exceptions, and counsel for the intervener filed a brief in reply to applicant's exceptions. No other exceptions or briefs were filed.

The application herein is governed by the so-called "grandfather" clause, section 401 (e) (1) of the act, which requires that a certificate of public convenience and necessity shall be issued to an applicant upon proof only that during the "grandfather" period¹ it was an air carrier continuously operating as such (except as to interruptions of service over which it had no control), unless the service it rendered for such period was inadequate and inefficient. The applicant for a "grandfather" certificate has the burden of proving each and every fact required by this section as conditions precedent to the issuance of a certificate. Unless all these conditions precedent are established by substantial evidence, the Authority does not have the statutory duty or power to issue a "grandfather" certificate.

Proof of the fact that applicant was an air carrier during the "grandfather" period includes, by definition of "air carrier" in section 1 (2) of the act, a showing that applicant was engaged in interstate or foreign air transportation, defined in section 1 (21) of the act, during the "grandfather" period. Because applicant operated wholly between points in California, one of the bases of intervenor's contention that the Authority lacks jurisdiction to entertain this proceeding is the argument that the Authority cannot hold a hearing where the applicant is not engaged in interstate or foreign air transportation.

With this contention we cannot agree. If the essential facts are alleged which, if established in a hearing, would entitle applicant to a certificate, the motion was properly denied. The application states that Condor Air Lines, Inc., is an "air carrier" engaged in the transportation by air of passengers and property, and sufficiently sets forth the allegation of continuous operation during the statutory period. Exhibit A to the application shows that applicant was formed to "conduct and engage in the general business of carrying mail, freight, and passengers," without limitation as to a particular State. Exhibit B thereto is a map which shows that applicant's line, though entirely within the boundaries of California, connects at San Francisco and Monterey with the lines of United Air Lines

¹ From May 14, 1938, to August 22, 1938, the effective date of sec. 401.

C.A.A. Opinions—Vol. I Temporary
Page No. LXXXVIII

Transport Corporation and Transcontinental & Western Air, Inc., which latter carriers we judicially know to be engaged in interstate transportation of passengers and property. We find therefore that the application is not defective on its face and that the examiner properly overruled the motion to dismiss and allowed the hearing to proceed.

Before a certificate may be issued, the Authority is required by the provisions of section 401 (e) (1) of the act to find, among other things, that the applicant was engaged in interstate or foreign air transportation. Section 1 (21) of the act in part defines this term as "the carriage by aircraft of persons or property as a common carrier for compensation or hire, * * * *in commerce between*" [italics supplied] certain enumerated points. The continuous existence of "interstate air transportation" during the "grandfather" period does not depend solely on applicant's operation of aircraft between the certain geographical points listed in section 1 (21), but may also be determined by the interstate character of the flow of traffic transported between these points, depending on the circumstances of the particular case. The fact that the present applicant has operated wholly between points in California does not necessarily establish that it did not engage in interstate air transportation during the "grandfather" period.

Applicant sought to show that it was engaged in interstate air transportation during the "grandfather" period, and a substantial part of the record is concerned with this issue. The president of applicant testified that the applicant held itself out to the public as a connecting air carrier. His testimony also indicates that applicant had transported one passenger during the "grandfather" period from Salinas to San Francisco, Calif., from which point the passenger traveled to Phoenix, Ariz., via United Air Lines Transport Corporation and American Airlines, Inc.

The president of applicant also briefly testified that applicant had transported another passenger from Monterey, Calif., to San Francisco who then traveled by air to Seattle, Wash. Applicant had no interline agreements for the sale of through transportation and no records of the transportation of these two passengers. During the "grandfather" period, applicant carried 163 revenue passengers but it does not appear in the record between what points they were transported.

The airport manager at Salinas, Calif., testified that he sold transportation to the traveler to Phoenix on some uncertain date between May 14 and August 22, 1938. He sold the passenger a ticket for transportation by applicant to its terminal at San Francisco, and arranged for the passenger to purchase tickets for air transportation between San Francisco and Phoenix. The ticket for the air transportation from Salinas to San Francisco was not a through ticket.

C.A.A. Opinions—Vol. I Temporary
Page No. LXXXIX

It is not clear from his testimony whether he acted as ticket agent for applicant, United Air Lines Transport Corporation and American Airlines, Inc. The witness had no records of this or any other interstate air transportation by applicant.

Other than the testimony of these two witnesses in these two instances, there is no other evidence in this case, such as documents, affidavits, or through tickets, to show that applicant transported by air persons or property in interstate commerce. Evidence of two isolated transactions in interstate commerce does not establish interstate air transportation. We find that applicant has failed to prove as one of the essential facts for issuance of a "grandfather" certificate that it operated in interstate air transportation during the period from May 14 to August 22, 1938. In so finding, we do not determine the ques-

tion of the essential nature of the applicant's operation (whether interstate or intrastate) as that question might be presented in another proceeding and upon a different record.

Moreover, the applicant is required by section 401 (e) (1) of the act to establish that it continuously operated as an air carrier during the "grandfather" period. Considerable testimony was introduced for the purpose of showing this fact. Applicant was incorporated in the State of California on November 16, 1936. As of that date, it took over all assets and liabilities of a predecessor company. Applicant operated between Alameda, San Francisco, Salinas, and Monterey from November 1936 to August 12, 1937, when scheduled operations were suspended because the runway at the Monterey airport was being resurfaced. The president of the applicant testified that although the operations could have been continued between Alameda and Salinas, it was felt that too great a financial loss would be suffered, as the bulk of its traffic originated at or was destined to Monterey. By November 3, 1937, all aircraft owned by the applicant had been sold.

The Monterey airport was reopened on November 11, 1937. Prior to that date, applicant's officers had decided not to resume operations until May 1, 1938, as the peak traffic season extended from about May 1 until November 1. As arrangements to lease aircraft had not been completed by May 1, applicant's president stated that May 9 was set as the date for resuming operations. The airport manager at Monterey was notified of this decision on April 28. However, on May 4 applicant's president learned that minor repairs were contemplated at the Monterey airport, and decided not to resume operations until this work had been completed. The repairs were not started prior to the time applicant began operations.

Two round trips daily were scheduled, effective May 19, 1938. Applicant's president testified that it was decided on May 17 to resume operations that afternoon so that a new pilot could obtain a

C.A.A. Opinions—Vol. I Temporary
Page No. XC

little practical experience before it became necessary for him to fly two round trips daily. On May 17 and again on the 18th, one round trip was operated over the route, without passengers. All publicity and press releases stated that applicant would begin operations on May 19. Operations were begun as scheduled on this date and continued throughout the "grandfather" period, except for cancellations on account of weather or lack of traffic.

Applicant did not hold itself out as ready and able to carry passengers prior to May 19, 1938. No aircraft were operated on May 14, 15, or 16 and applicant did not operate as a common carrier on May 17 and 18 when survey flights were made. Its failure to operate as a common carrier on the above-mentioned dates was not due to causes beyond its control, but simply to a decision of its officers to start operations on May 19. We conclude, therefore, that the applicant did not continuously operate within the meaning of section 401 (e) (1) of the act from May 14, 1938, to August 22, 1938.

We find:

1. That we have jurisdiction to entertain the application.
2. That applicant has failed to establish that it was an air carrier continuously operating as such (except as to interruptions of service

over which it had no control) from May 14, 1938, to August 22, 1938.

The application is therefore denied.

An appropriate order will be entered.

Hinckley, Branch, Ryan, Mason, Warner, Members of the Authority, concurred in the above opinion.

ORDER

Condor Air Lines, Inc., having filed application for a certificate of public convenience and necessity under section 401 (e) (1) of the Civil Aeronautics Act of 1938; a hearing thereon having been held; the Authority upon consideration of the record of such proceedings having issued its opinion containing its findings of fact, conclusions, and decision, which is attached hereto and made a part hereof, and finding that its action in this matter is necessary pursuant to said opinion:

It Is ORDERED, That the application of Condor Air Lines, Inc., in the above-entitled matter be and the same hereby is denied.

C.A.A. Opinions—Vol. I Temporary
Page No. XCI

DOCKET NOS. 265 AND 285

CONTINENTAL AIR LINES, INC., AMENDMENT OF CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

In the matter of the petition of Continental Air Lines, Inc., for an amendment to its certificate of public convenience and necessity for route No. 29 under section 401 (h) of the act to include Roswell, Hobbs, and Carlsbad, N. Mex., as intermediate points.

Decided March 8, 1940

In the matter of the certification by the Postmaster General pursuant to section 401 (n) of the act with respect to the transportation of mail by aircraft between El Paso, Tex., and Albuquerque, N. Mex., by way of Carlsbad, Hobbs, and Roswell, N. Mex.

APPEARANCES:

John S. Wynne, Sheldon G. Cooper, and Terrell C. Drinkwater for Continental Air Lines, Inc.

William C. O'Brien for the United States Postmaster General.

Hubert A. Schneider for the Civil Aeronautics Authority.

OPINION

BY THE AUTHORITY:

Continental Air Lines, Inc., by petition filed June 28, 1939, pursuant to section 401 (h) of the Civil Aeronautics Act of 1938, seeks an amendment to its certificate of public convenience and necessity for route No. 29 so as to authorize it to engage in scheduled air transportation with respect to persons, property, and mail between Albuquerque, N. Mex., and El Paso, Tex., via Roswell, Hobbs, and Carlsbad, N. Mex.

The Acting Postmaster General on July 25, 1939, certified to the Authority, pursuant to the provisions of section 401 (n) of the act, that the needs of the Postal Service require the transportation of mail by aircraft between El Paso, Tex., and Albuquerque, N. Mex., by way of Carlsbad, Hobbs, and Roswell, N. Mex., in addition to the transportation of mail now authorized in the certificate of public convenience and necessity covering service on route No. 29, and filed with the Authority a statement showing the additional service required and the facilities necessary in connection therewith.

After due notice to the public and interested parties, a public hearing was held on August 17, 1939, before Examiner C. Edward Leasure of the Authority, at which the petition and certification with the consent

of the parties were consolidated into one proceeding. After conclusion of the hearing, a memorandum brief was filed on behalf of the petitioner in support of its petition.

The examiner's report was duly filed and served on January 19, 1940, recommending that the Authority find that the transportation of mail, persons, and property between El Paso, Tex., and Albuquerque, N. Mex., by way of Carlsbad, Hobbs, and Roswell is required by the public convenience and necessity and that Continental Air Lines, Inc., is fit, willing, and able to perform the proposed transportation properly. It was further recommended that the certificate for route No. 29 should be amended accordingly. No exceptions were filed to this report.

The certificate of public convenience and necessity which is sought to be amended in this proceeding was issued by the Authority on March 9, 1939,¹ authorizing petitioner to engage in air transportation with respect to persons, property, and mail between the terminal points Denver, Colo., and El Paso, Tex., via the intermediate points Colorado Springs, Colo., Pueblo, Colo., Trinidad, Colo., Las Vegas, N. Mex., Santa Fe, N. Mex., and Albuquerque, N. Mex. (designated as route No. 29). Petitioner also holds a certificate of public convenience and necessity, issued on April 28, 1939,² authorizing it to engage in air transportation with respect to persons, property, and mail between Pueblo, Colo., and Wichita, Kans., via La Junta, Colo., Garden City, Dodge City, and Hutchinson, Kans. (designated as route No. 43). The Denver-El Paso route connects with the transcontinental routes of American Airlines, Inc., at El Paso, Transcontinental & Western Air, Inc., at Albuquerque, and United Air Lines Transport Corporation at Denver.

Section 401 (n) of the act provides that whenever the Postmaster General shall find that the needs of the Postal Service require the transportation of mail by aircraft between any points, he shall certify such finding to the Authority and file a statement showing such additional service and the facilities necessary in connection therewith. The same section, however, authorizes the Authority to issue or amend a certificate for such service only if, after notice and hearing, such service is found by it to be required by the public convenience and necessity.³ The declaration of policy of the act states that the Author-

¹ In the matter of Continental Air Lines, Inc., certificate of public convenience and necessity, docket No. 2-401-E-1.

² In the matter of Continental Air Lines, Inc., and Braniff Airways, Inc., certificate of public convenience and necessity, docket Nos. 2-401-E-2 and 150.

³ Section 401 (n) of the act provides: "Whenever, from time to time, the Postmaster General shall find that the needs of the Postal Service require the transportation of mail by aircraft between any points within the United States or between the United States and foreign countries, in addition to the transportation of mail authorized in certificates then currently effective, the Postmaster General shall certify such finding to the Authority and file therewith a statement showing such additional service and the facilities necessary in connection therewith, and a copy of such certification and statement shall be posted for at least twenty days in the office of the secretary of the Authority. The Authority shall, after notice and hearing, and if found by it to be required by the public convenience and necessity, make provision for such additional service, and the facilities necessary in connection therewith, by issuing a new certificate or certificates or by amending an existing certificate or certificates in accordance with the provisions of this section."

ity shall consider "as being in the public interest and in accordance with the public convenience and necessity," among other things, "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." It is clear, therefore, from the express provisions of the act, that the need of the Postal Service is only one of the elements which must be taken into consideration in determining whether such additional service, so certified by the Postmaster General, is also required by the broader standard of public convenience and necessity under which the Authority must reach its determination. The certification of the Postmaster General relative to postal needs is obviously entitled to great weight, particularly where it is supported by evidence that a prospectively substantial volume of mail will be transported in such service. The weight to which such a certificate is entitled is due to the informed policy and expert knowledge of the Post Office Department on the subject and the clear intent of the act. It is, nevertheless, apparent that the certification of postal needs alone cannot determine the broader question of the public convenience and necessity, and that it is only on the basis of this latter finding that we have the power under the act to issue or amend a certificate in order to provide for the additional service with respect to which certification may be made.

It is apparent that one of the ordinary standards of measurement of public convenience and necessity—namely, that there shall be a demand for the proposed service which will remunerate the carrier to an extent sufficient to justify him in maintaining it—does not possess its customary force in new route applications under the Civil Aeronautics Act. Section 406 (b) which provides for the fixing of compensation for the carriage of mail at a level which takes into consideration, among other things, the need of the carrier for revenues sufficient to insure the maintenance of the mail service, substantially alters the conventional standard. Under the act the question of the public convenience and necessity involves a determination of the amount of governmental expenditures which would be justified by the degree of public interest and value attaching to the particular route, and by the amount of service that such a route might be expected to render.

Although it is, of course, to be anticipated that all parts of the air transport system of the United States will make continuing progress towards independence of Government support, it would not only

C.A.A. Opinions—Vol. I Temporary
Page No. XCIV

seem an unsound administration of the act but also a policy contrary to its intent to require that each addition to the existing system of air routes should be independent of Government assistance through mail payments at the time of its establishment or at any early stage of its operation. Only on a small part of the existing route mileage could such a standard be met, and to establish it for the future would, in effect, freeze the present air transport map, allowing very minor modifications or none at all over a protracted future period.

In determining whether or not a proposed operation will have a value corresponding to its prospective cost to the Government, it is necessary in effect to balance the prospective cost against the aggregate prospective contribution to public convenience. The measure of public convenience involves both the number of persons served and the extent and importance of the service rendered to each. To save a very small amount of time in transit, even for a considerable

number of travelers and a considerable amount of mail, would not justify any large outlay of Government funds. Nor would such an outlay be justified if the number of prospective travelers and the amount of mail were to be extremely small, even though the saving of time on that small volume of traffic were large. On the other hand, it is true that if there is a district, not now served by air transportation, which seems likely under favorable conditions to develop a certain amount of air travel, and if that district is removed (for example) 150 miles or more from the nearest point now served by air transport, it would be justifiable to take measures and anticipate governmental expenditures to establish and maintain air transport there which would not be justified for a district of the same size and the same traffic potentiality located (for example) only 30 or 40 miles by surface transportation from some point where air transportation is currently available.

It is impossible to put these relationships into arithmetical form. No rigid formula can be set for the measurement of the effect of a particular new service on public convenience, and there could in any event be no rigid standard relating the amount of increase of public convenience so determined to the amount of governmental expenditure that it would justify. Still the general relationship must be borne in mind as a guide for the judgment of new routes and their comparison with existing ones; and in the application of that relationship for such purposes prospective cost, prospective amount of traffic, and the average contribution made to the convenience of each person who contributes to that traffic are important elements to be considered.

Route No. 29, and the route as proposed to be amended, including the mileages between the various points thereon, are indicated by the following map:

C.A.A. Opinions—Vol. I *Temporary
Page No. XCV*



The map shows that the proposed route represents a substantial deviation from the present route. The mileage between Albuquerque and El Paso via the proposed intermediate stops is over twice as much as the direct mileage between those points.

The following table shows the population of the communities proposed to be served for the year 1930, according to the official census, and for the year 1939, according to estimates submitted by the local chambers of commerce and the United States Post Office Department.

City	1930	1939	
	Official census	Chamber of Commerce estimate	Post Office estimate
Roswell.....	11, 173	14, 000	14, 000
Hobbs.....	598	14, 500	12, 800
Carlsbad.....	3, 708	6, 304	4, 800
Total.....	15, 479	34, 804	31, 600

C.A.A. Opinions—Vol. I Temporary
Page No. XCVI

The population figures supplied by the Post Office Department are based upon the last census made by that Department. The record shows that the census was made from the records of the Department of citizens in the various towns receiving mail by box, and city and general delivery service, with an estimate as to the number of transients. The population figures of the Post Office Department appear to be more reliable than estimates which are unsubstantiated by any similar factual basis.

The population of the trade areas of the interested communities was also estimated by the Post Office Department upon the basis of the number of persons served out of the various post offices. This estimate, together with size of the area served, is shown in the following table:

City	Population of trade area 1939 (Post Office estimate)	Approximate trade area in square miles
Roswell.....	17, 700	168
Hobbs.....	17, 800	50
Carlsbad.....	8, 500	50
Total.....	44, 000	268

The Hobbs Chamber of Commerce estimated a population of 50,000 persons within a radius of 50 miles, including a number of

small towns in such area, that would benefit by the proposed service. No estimates were made by the Roswell or Carlsbad Chambers of Commerce of the population of the trade areas of their communities, although the latter Chamber of Commerce estimated the population of Eddy County, in which it is located, at approximately 20,000. The population of Eddy County in 1930, according to the official census was 15,842.

The record does not support any expectation that the population of this area will experience a marked increase. Although the population of Hobbs increased from about 600 to approximately 13,000 persons in the 9 years from 1930 to 1939, due to the discovery of oil in that region, it was testified that only normal growth may be expected in the future.

The record indicates that Roswell is an important agriculture and livestock center. It also appears that it is adjacent to the Lincoln National Forest and the Bottomless Lakes States Park, two very popular recreational areas of New Mexico. In Roswell is located the

C.A.A. Opinions—Vol. I Temporary
Page No. XCVII

New Mexico Military Institute with an enrollment of approximately 600 students representing many States of the Union and some foreign countries.

Hobbs is recognized as the center of New Mexico's oil industry. It was testified that there are 2,000 oil wells in this territory and that there are approximately 300 oil operators active in the Hobbs area. The record indicates that there is presently a considerable amount of air traffic in and out of Hobbs, and that during the year ended July 1, 1938, there were 423 private plane arrivals at Hobbs carrying 634 passengers and that 15 oil companies owned 17 planes which used the airport regularly. It was testified that it was not expected that these oil companies would abandon the use of these planes upon the inauguration of air transportation service to Hobbs, but that they would continue to be used chiefly by executives and that the employees of the companies would benefit by and need the air-line service.

According to an exhibit prepared by the Hobbs Chamber of Commerce, the value of the oil and gas produced in Lea County in 1938 (in which Hobbs is situated) amounted to approximately 36 million dollars, and that the county's gross business receipts during 1938 totaled around \$71,000,000. The annual pay roll in this territory was estimated at \$20,000,000. It was testified that the oil industry paid wages well above the average.

Carlsbad, due to the nearby Carlsbad Caverns National Park, is of Nation-wide importance to tourists. According to the records of the park, over 200,000 persons visited the caverns during the year 1938. It further appears that the park is steadily growing more popular as a tourist attraction. The record indicates that the Carlsbad Caverns Coaches, operating a bus line between the park and El Paso, carried over 10,000 people between those points, during the year 1938, most of whom were transcontinental passengers. It was testified by the superintendent of the park that the inauguration of air transportation would increase the number of transcontinental

passengers visiting the caverns. Carlsbad is also the center of the potash industry of the United States. An official of the Potash Co. of America testified that approximately two-thirds of the domestic production of potash is produced at Carlsbad. It appears that the product has Nation-wide distribution and that in the case of the Potash Co. of America branch offices are maintained in Denver, Baltimore, Md., and Atlanta, Ga.

Albuquerque and El Paso are the nearest large cities to the communities which are proposed to be served. As such they are the natural distribution points for these towns, and there is a substantial community of interest and trade relationship between them. In addition, Hobbs, as the center of New Mexico's oil industry, has some community of interest with the oil centers in Texas and Oklahoma to

C.A.A. Opinions—Vol. I Temporary
Page No. XCVIII

the east. However, it was testified that, chiefly because of the State regulation of the oil industry, its needs would best be served by the proposed route offering direct service to Santa Fe, the capital of New Mexico. It also appears that several oil companies operating in Hobbs have offices in Denver.

There is some testimony in the record regarding the trade relationship between Hobbs and Roswell. It appears that Roswell serves to some extent as a local business and financial center to the oil companies operating in the vicinity of Hobbs. However, due to the proximity of these communities it is doubtful if any appreciable air-line traffic would be developed between them as a result of the inauguration of the proposed route and no attempt has been made by the petitioner to establish the need for the proposed service as a local operation.

Hobbs does not receive any regular rail transportation service.⁴ Roswell and Carlsbad are located on a branch line of the Atchison, Topeka & Santa Fe Railroad. There is a regular passenger schedule operating each way daily between Carlsbad, Roswell, and Clovis, N. Mex., connecting with trains to the east, southeast, and west. The schedule time between Roswell and Albuquerque is 12 hours and 30 minutes and between Carlsbad and Albuquerque 14 hours and 30 minutes. Rail time between Roswell and El Paso is approximately 20 hours and between Carlsbad and El Paso about 13 hours.

The transportation needs of the interested communities are supplied chiefly by motor transportation companies. There are two daily bus schedules in each direction between Roswell and Albuquerque and a like number between Roswell and El Paso. Schedule time between Roswell and Albuquerque or El Paso is approximately 6 hours. Two daily bus schedules operate each way between Carlsbad and El Paso, with an average time of approximately 4 hours. Connecting schedules are available between Carlsbad and Albuquerque with scheduled time averaging between 8 and 9 hours. There is one daily connecting bus schedule each way between Hobbs and Albuquerque with elapsed time of approximately 12 hours and a daily bus schedule each way between Hobbs and El Paso averaging 5½ hours for the trip.

The record indicates that much of the business travel in this area is by means of private automobile. Highway distances between the points on the proposed route are shown by the following table:

*The data concerning transportation schedules and schedule time between the various points on the proposed route is based chiefly upon an exhibit prepared by the petitioner, which, it was testified, did not purport to show all possible connections between such points, but only those which provided the best service.

C.A.A. Opinions—Vol. I *Temporary
Page No. XCIX*

City	Albuquerque	Roswell	Hobbs	Carlsbad	El Paso
Albuquerque.....		206	227	285	272
Roswell.....	206		121	79	202
Hobbs.....	227	121		70	237
Carlsbad.....	285	79	70		167
El Paso.....	272	202	237	167	

The following table shows the approximate average time by means of existing forms of transportation between the points on the proposed route and the average time between such points by air as proposed by the petitioner:

Route	Rail	Bus	Air	
	Hours	Hours	Hours	Minutes
Hobbs to Albuquerque.....		12½	1½	
Hobbs to El Paso.....		5½	1½	
Roswell to Albuquerque.....	12½	6½		55
Roswell to El Paso.....	20	5½	2	
Carlsbad to El Paso.....	13	4		55
Carlsbad to Albuquerque.....	14½	8½	2½	

The present air-mail transportation needs of Roswell, Hobbs, and Carlsbad are served through a combination of star route and rail service to points connecting with air carriers. An inspector of the Post Office Department testified at the hearing in support of the certification of the Postmaster General. In estimating the benefit to be derived from direct air-mail service over the proposed route, he assumed a daily round-trip schedule operating from El Paso to Denver in the morning and from Denver to El Paso in the afternoon. In general it appears from his testimony that although air mail dispatched from the East and the West coasts in the evening via Transcontinental & Western Air, Inc., is not received in Carlsbad and Roswell until the next evening, direct air-mail service would advance such mail only a few hours. On the other hand, air mail similarly dispatched from the East and West coasts is not received in Hobbs until the second morning, whereas direct service would considerably advance this mail, depositing it in Hobbs the afternoon after dispatch. With a morning flight from El Paso evening mail dispatched from the Los Angeles gateway via American Airlines, Inc., would be advanced approximately a full business day to all three points, being received the next morning.

Morning mail dispatched from the East and West coasts either by Transcontinental & Western Air, Inc., or American Airlines, Inc., arrives at all three points the next morning, and very little improvement would result from the inauguration of the proposed service. With direct air service, air mail from the Denver gateway could be received the same afternoon instead of the following morning. Since present morning dispatches from Roswell, Hobbs, and Carlsbad make plane connections the same day, the only advantage of direct service would be that it might afford better connections and advance delivery. The chief benefit to be derived from direct mail service appears to be that air mail dispatched from the three towns in the afternoon could make connections to the east and west the same evening instead of the following morning, thus saving a full business day. Air mail dispatched from Hobbs and Carlsbad in the afternoon and from Roswell in the evening arrives in Denver the next afternoon.

The record contains considerable testimony with respect to the need for direct air-mail service between the three proposed intermediate points and El Paso and Albuquerque. It appears, in general, that regular morning mail from the intermediate points arrives at El Paso or Albuquerque the same day and that mail dispatched in the afternoon or evening arrives the next morning and vice versa. It is apparent that although the benefits to be derived from direct air-mail service would be a matter primarily dependent upon the schedules ultimately provided by the carrier, substantial savings in some instances might result.

The following table shows the results of a count, conducted by the Post Office Department, of air mail received at and dispatched from Roswell, Hobbs, and Carlsbad during the period from July 24 to July 30, 1939.

City	Daily average dispatched			Daily average received		
	Pieces	Weight		Pieces	Weight	
		Pounds	Ounces		Pounds	Ounces
Roswell.....	158	5	2	166	7	1
Hobbs.....	69	3	4	67	2	4
Carlsbad.....	93	3	9	89	3	8
Total....	320	11	15	322	12	13

It was testified by an Inspector of the Post Office Department that the inauguration of direct air service to these communities might

increase the volume of air mail at Hobbs approximately 400 percent, Roswell 40 percent, and Carlsbad 25 percent. The substantial estimated increase in air-mail business at Hobbs was based upon the

present lack of good air-mail connections at Hobbs and the opinion of the inspector that, since the oil companies, operating in that territory had main offices in distant cities located in several different States, such companies would make extensive use of the air mail if good connections were provided.

The Post Office Department's estimates of the volume of first-class and air mail originating at the three towns in question and the estimated revenues from such mail for the year 1938 are shown in the following table:

City	Postal receipts	Estimated pounds of first-class mail	Estimated revenue received from air mail	Estimated pounds of air mail
Roswell.....	\$72, 323	53, 965	\$4, 126	2, 096
Hobbs.....	54, 836	38, 516	1, 376	1, 020
Carlsbad.....	42, 236	35, 218	1, 172	1, 225
Total.....	169, 395	127, 699	6, 674	4, 341

The record shows that petitioner presently operates two daily round trips between Albuquerque and El Paso over route No. 29. If the certificate for this route is amended, as requested, petitioner plans to operate its second round trip schedule via the new intermediate points and to continue its first round trip as a direct service between Albuquerque and El Paso. The difference in mileage between Albuquerque and El Paso direct and via the proposed intermediate points is 254 miles. If the proposed service is authorized, 15,240 additional miles per month would be scheduled on route No. 29. On the basis of petitioner's estimate of 96 percent performance of scheduled mileage, 14,631 additional miles would be operated each month.

Total operating expense for six-passenger Lockheed 12-A equipment for the additional mileage to be operated over the proposed route is estimated at 37.24 cents per revenue mile flown, which compares favorably with the average operating expense per revenue mile on route No. 29.⁵ Petitioner estimates an annual average load factor of 33½ percent or two passengers per trip, with estimated passenger revenues of \$17,468.18. The entire amount of such revenues cannot

⁵ In the matter of Continental Air Lines, Inc., docket No. 231.

C.A.A. Opinions—Vol. I *Temporary
Page No. CII*

be attributed to the three new points since petitioner in forecasting its load factor estimated a holdover of 8½ percent of its present load factor of 25 percent on the second schedule between Albuquerque and El Paso and of 25 percent to be derived from the new points.

Total nonmail revenues per additional mile flown, according to petitioner's forecast, amounts to 10.15 cents per mile. Assuming that petitioner's forecast of total operating expenses of 37.24 cents per additional mile flown is accurate, it appears that air-mail com-

pensation necessary to allow the petitioner to break even on the operation of the proposed additional mileage would approximate 27 cents per additional mile flown. Since petitioner forecasts the operation of 175,572 additional miles per year, the annual expenditure by the Government in the form of air-mail compensation would be approximately \$47,400, without giving consideration to any element of profit.

No air navigation facilities presently exist on the proposed route via Roswell, Hobbs, and Carlsbad, and since, therefore, any operations via those points would necessarily be restricted to daylight contact operation as proposed by applicant, our determination with respect to the requirements of the public convenience and necessity under such circumstances need not take into consideration the cost incident to the installation and maintenance of air navigation facilities. If, however, such facilities were to be installed, it is apparent not only that the degree of public use to be derived from the service might be expected to be increased but also that the present cost of their construction and maintenance would have to be weighed in connection with any determination as to the requirements of the public convenience and necessity. The record shows that an initial expenditure of approximately \$271,000 would be required to establish, and an annual expenditure of approximately \$63,000 to maintain, such facilities. However, the cost of installation and maintenance of air navigation facilities cannot be charged solely to the air carrier who proposes the new service, since they would also be available to military and private fliers as part of the national airway system.

In view of the facts above set forth, we find that the existing means of transportation in the area proposed to be served are inadequate and that the proposed service would substantially improve the existing means of passenger transportation and in some instances would likewise improve the existing mail service. Although the population of the area proposed to be served is small and there is no convincing showing by the petitioner as to passenger revenue potentials, the nature and extent of the business activities which have been developed in this area and its attraction to tourists support a finding that considerable benefit will be derived by the public from the inauguration of the proposed service. Also, due to the comparative isolation of

C.A.A. Opinions—Vol. I *Temporary
Page No. CIII*

these communities, the inauguration of direct air service should materially aid in the expansion and development of these communities and their surrounding territory, which would be reflected by increased air-line traffic. Furthermore, as stated above, the Postmaster General has certified to the Authority that the needs of the Postal Service require the transportation of mail as proposed, and considerable testimony was given at the hearing by an inspector of the Post Office Department in support of the certification. It was established that substantial increases in air-mail revenue would be experienced as a result of the inauguration of the proposed service.

Exhibits furnished by the petitioner and the testimony of its officials concerning the financial condition of the company, the members of its personnel, the nature of its operations, and the type and amount of its equipment establish that it is fit, willing, and able properly to

perform the air transportation for which authorization is sought and to conform with the provisions of the act and the rules, regulations, and requirements of the Authority thereunder.

On the basis of the above findings of fact, it is found that the public convenience and necessity, as set forth in section 401 of the act and as defined by the declaration of policy contained in section 2 of the act, require air transportation between Albuquerque, N. Mex., and El Paso, Tex., via Roswell, Hobbs, and Carlsbad, N. Mex., and that the applicant is fit, willing, and able to perform such transportation properly

An appropriate order will be entered, amending the certificate of convenience and necessity heretofore granted to Continental Air Lines, Inc., for route No. 29, so as to authorize it to engage in scheduled air transportation with respect to persons, property, and mail between the terminal point Denver, Colo., the intermediate points Colorado Springs, Colo., Pueblo, Colo., Trinidad, Colo., Las Vegas, N. Mex., Santa Fe, N. Mex., Albuquerque, N. Mex., Roswell, N. Mex., Hobbs, N. Mex., Carlsbad, N. Mex., and the terminal point El Paso, Tex.

Hinckley, Branch, Ryan, Mason, Warner, Members of the Authority, concurred in the above opinion.

ORDER

Continental Air Lines, Inc., having filed a petition, under section 401 (h) of the Civil Aeronautics Act of 1938, for an amendment to its certificate of public convenience and necessity for route No. 29, and the Acting Postmaster General having certified to the Authority, pursuant to section 401 (b) of the Civil Aeronautics Act of 1938, that the needs of the Postal Service require the transportation of mail by aircraft between El Paso, Tex., and Albuquerque, N. Mex., by way of Carlsbad, Hobbs, and Roswell, N. Mex., in addition to the transportation of mail now authorized in certificates of public convenience and necessity currently effective, and the petition and certification having been consolidated into one proceeding, and a full hearing thereon having been held, and the Authority, upon consideration of the record in said proceeding, having issued its opinion

C.A.A. Opinions—Vol. I Temporary Page No. XCIV

containing its findings of fact, conclusions and decision, which is attached hereto and made a part hereof, and finding that its action in this matter is necessary pursuant to said opinion:

IT IS ORDERED, That the certificate of public convenience and necessity authorizing Continental Air Lines, Inc., subject to the provisions of said certificate, to engage in air transportation with respect to persons, property, and mail between the terminal point Denver, Colo., the intermediate points Colorado Springs, Colo., Pueblo, Colo., Trinidad, Colo., Las Vegas, N. Mex., Santa Fe, N. Mex., Albuquerque, N. Mex., and the terminal point El Paso, Tex., be, and the same hereby is, amended so as to authorize Continental Air Lines, Inc., subject to the provisions of said certificate to engage in air transportation with respect to persons, property, and mail between the terminal point Denver, Colo., the intermediate points Colorado Springs, Colo., Pueblo, Colo., Trinidad, Colo., Las Vegas, N. Mex., Santa Fe, N. Mex., Albuquerque, N. Mex., Roswell, N. Mex., Hobbs, N. Mex., Carlsbad, N. Mex., and the terminal point El Paso, Tex.

IT IS FURTHER ORDERED, That the exercise of the privileges granted by said certificate shall be subject to the terms, conditions, and limitations prescribed by section 238.3 of the Authority's rules and regulations (formerly regulation 401-F-1) issued by the Authority on February 24, 1939, all amendments thereto, and such other terms, conditions, and limitations as may from time to time be prescribed by the Authority.

Airline Cases

(Continued from page 114)

Office Department had certified that the needs of the Postal Service required air-mail transportation over a new route. In the opinion accompanying the order on this case, the Authority indicated that such a recommendation from the Post Office could not be the sole factor under the Civil Aeronautics Act determining public convenience and necessity. In this regard the opinion stated:

"The certification of the Postmaster General relative to postal needs is obviously entitled to great weight, particularly where it is supported by evidence that a prospectively substantial volume of mail will be transported in such service. The weight to which such a certificate is entitled is due to the informed policy and expert knowledge of the Post Office Department on the subject and the clear intent of the act. It is, nevertheless, apparent that the certificate of postal needs alone cannot determine the broader question of the public convenience and necessity, and that it is only on the basis of this latter finding that we have the power under the act to issue or amend a certificate in order to provide for the additional service with respect to which certification may be made."

The Condor Air Lines case was one in which the petitioner sought a certificate of public convenience and necessity under the so-called "grandfather clause" of the Civil Aeronautics Act of 1938. The petition was denied on the grounds that Condor Air Lines did not continuously operate in interstate air transportation over the route for which it sought a certificate from May 14, 1938, to August 22, 1938, the period for qualification under that clause.

The full texts of the orders and opinions on the Northwest Airlines, Continental Air Lines, and Condor Air Lines cases appear in the "Official Actions" section.

Indianapolis

(Continued from page 111)

by contact; and, thirdly, it can be used to supplement an instrument landing system.

In the latter case, an instrument

IT IS FURTHER ORDERED, That the said certificate, as amended, shall be issued in the form attached hereto and shall be signed on behalf of the Authority by the Chairman of the Authority and shall have affixed thereto the seal of the Authority attested by the Secretary. Said certificate, as amended, shall be effective from the 8th day of March 1940.

landing approach is made in the manner previously described and the first steps of an instrument landing followed, but upon passing the inner marker the pilot picks up the approach lights as soon as they become visible. The pilot is thereby provided with visual aids for making actual contact with the runway.

The approach lights are designed to provide a sharp cut-off of all stray light which otherwise would cause diffusion, halation, and reflections. They are remotely controlled from the airport tower for brilliancy and for simultaneous coning in toward the center of the approach lane. The pilot can call the tower by radio during flight and ask for any desired changes in brilliancy or any degree of setting toward or away from the center.

Red lenses are mounted on the outside of each of the controlled approach lights. Thus the pilot is warned if he is too far to either side of the approach lane, and is shown in which direction he must bear to reach the center of the approach lane.

The first 1,200 feet of approach lights are equally spaced at 200-foot intervals on each side of the approach. The remaining 1,300 feet of approach lights are spaced at 100-foot intervals. Flush type runway lights then continue along either side of the runway proper.

Neon Tube Approach Lights

As a further visual aid in making landings under conditions of restricted visibility, there has been installed along the southwest approach to the SW.-NE. runway at Indianapolis, a row of 15 neon tube approach lights spaced at 100-foot intervals, commencing 3,100 feet from the end of the paved runway, approximately 800 feet before reaching the inner marker, and extending 1,400 feet on toward the runway.

These lights consist of horizontal neon bars, each 6 feet 6 inches long, mounted approximately 4 feet above ground. They are brilliantly lighted with the

characteristic neon red color and are focused toward the incoming aircraft.

Runway Contact Lights

Seven different types of runway contact lights are installed as indicated in figure 2, along the SW.-NE. runway at Indianapolis. By means of tests under varying conditions and questionnaires submitted to pilots participating in the tests, the Authority is accumulating data on the comparative performance of various standard types and new designs of contact lights. A means is also provided for controlling the intensity of these lights.

Research Continues: Microwave System Studied

By no means the final solution to the problems of instrument landing, the Indianapolis installation merely represents a complete and unified system, "frozen" at a practical stage of development in order to enable pilots and the industry to start accumulating first-hand knowledge of its technique and operation.

The Authority is now conducting experiments on another development, known as the microwave system, which utilizes the extreme ultra high frequencies of the radio spectrum and may offer even greater promise for the future. It is generally agreed, however, that it requires further developmental work, experimental installations, and field trials before being ready for extensive testing.

Some of the possible advantages of the microwave system which may eventually be realized are improved glide-path and localizer, reduced aerodynamic drag of antenna systems, and freedom from error due to alteration of receiver sensitivity. The National Academy of Sciences report recommended that the further development of the microwave system be expedited, and that service tests be accomplished by the Government agencies involved as soon as possible.