

1938

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Larry C. Fritz

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Recommended Citation

Larry C. Fritz, *The Importance of Flight Dispatching in Air Transportation*, 9 J. AIR L. & COM. 279 (1938)
<https://scholar.smu.edu/jalc/vol9/iss2/7>

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THE IMPORTANCE OF FLIGHT DISPATCHING IN AIR TRANSPORTATION*

LARRY C. FRITZ†

Flight dispatching may be defined as the control of aircraft both in the air and on the ground to the end that scheduled operation of aircraft may be carried out with the greatest margin of safety.

A resume of the various factors that enter into flight dispatching will indicate why it is a prominent element in safety in the air.

First, the flight dispatcher, one on duty every hour in the day in the principal zones, is in radio contact with all flights from the time they take off until they land at their destination.

One hour before a pilot starts on his run he reports to the dispatch office. There he goes over weather conditions as reported hourly along his route and discusses the weather situation with the flight dispatcher on duty and one of the company meteorologists. The dispatcher has previously become familiar with the conditions over the entire U. S., having gone over the reports and discussed the recent weather maps with the meteorologist. Weather maps, one of which is drawn every six hours from several hundred reports over the United States and Canada, are supplemented by airplane soundings with a meteorograph, pilot balloon soundings for wind aloft data, and temperature and weather condition reports received by pilots to round out a broad picture of weather conditions.

The pilot has decided whether the flight can be made with absolute safety and if the flight dispatcher is of the same opinion plans can be made for the flight. In his discussion with the meteorologist and flight dispatcher the pilot has obtained estimates of cloud base and tops, visibility, location of particular storms, their intensity and rate and direction of movement, probable levels where icing conditions may be encountered and force and direction of wind. He determines the altitude to fly to insure safety and comfort for his passengers and secondly to gain the greatest help or least retardation from winds.

* Paper delivered at the Annual Meeting of the Aeronautical Section of the National Safety Council, Kansas City, Missouri, October 13, 1937.

† Transcontinental & Western Air, Inc., Kansas City, Mo.

If the pilot is not at a main terminal his forecast and flight plan data prepared by the meteorologist are forwarded to him by radio at least one hour before the flight is due to depart, and with latest weather map available he is able to go over conditions in the same manner as if he were talking it over with the meteorologist. If he is in doubt as to the safety of the flight he may telephone the flight dispatcher and discuss the flight with him prior to making his decision. Thus, he has checked his own decision at least twice with his consultation with meteorologist and flight dispatcher. He further verifies the weather conditions by going over the latest forecast issued by the U. S. Weather Bureau covering his particular route.

The pilot then computes his flight plan from data on wind and temperatures at various altitudes. He computes the speed that will have to be made to maintain schedule or the most economical speed from his wind and temperature data and the per cent power to use. His altitude may be anything from 500 to 12,000 feet, only being restricted by the prescribed odd or even levels of flying and the weather conditions. If he is flying from zero to 179 degrees he will fly at odd altitudes, one, three, five thousand, etc., but if flying from 180 to 359 he will fly at even levels. This provides desired altitude separation of flights going in opposite directions. He computes his time over intermediate check points and time to his various stops. He computes his gasoline consumption and determines how much he will use to the next refueling stop and determines his radius of action.

Now the amount of gasoline necessary is not just enough to reach the terminal that he is released to. He must have a reserve supply sufficient for cruising at least forty-five minutes after reaching this terminal, if weather is good. If weather is near the minimum requirements he must plan on enough gasoline in addition to carry him to one or two alternate airports where weather is good; airports that he can reach after arriving over his destination and still have fuel enough for an additional forty-five minutes. The dispatcher in conjunction with the meteorologists have selected these alternate airports, taking into consideration the probable weather conditions, the proximity and condition of the alternate fields.

After making these preparations a clearance form is made up giving a written release by the flight dispatcher to the pilot for release to the next terminal. This clearance is first signed by the mechanic in charge of servicing the airplane who indicates that engines and equipment have been inspected and found in satisfac-

tory condition for the flight and indicating the amount of gasoline and oil the plane is serviced with. The flight dispatcher signs the clearance releasing the flight from a terminal to the next scheduled stop. He also indicates whether the flight is to proceed ground contact or if weather conditions necessitate on instruments.

Latest weather reports from the many observing stations along and adjacent to the airway are put on the clearance. A copy of the latest report on field conditions at the various airports and fields is appended to the clearance together with a forecast for the route made by the United States Weather Bureau and a special trip forecast made by the company meteorologist.

Then the pilot signs the clearance, acknowledging receipt of clearance and the weather reports, and indicates that he considers conditions suitable for scheduled flight and that he will conduct the flight in accordance with approved procedure. A copy of the clearance is retained at the dispatch office with a copy of the pilot's flight plan while the pilot takes the original.

Again the pilot and the dispatcher have checked each other.

At each point or terminal where the flight lands a new clearance is prepared and the flight dispatcher after considering the weather and gasoline load releases the flight to the next terminal.

Once in the air the flight dispatcher has not just cleared the flight and forgotten it. From the pilot's estimated times over various check points along the route, the dispatcher, by means of radio telephone, checks the flight's progress from point to point. Continually watching the weather changes, the dispatcher is ready to advise the pilot of any bad weather that has developed along his route. He may, for instance, advise him to detour a thunderstorm in a certain direction, or to change his altitude to avoid reported icing conditions. The dispatcher is aided in his analysis of weather conditions by hourly and special reports from observing stations over the entire United States plus reports from pilots in other flights from coast to coast flying at various altitudes.

Rules and regulations have been promulgated covering every contingency which might arise in flight such as radio failure, engine failure, poor flying conditions and many others. The pilot is trained as to the procedure to be followed in the event any of these occur and the procedure to follow is nearly automatic. The pilot reports any variation from normal routine in flight and if the dispatcher believes a departure from the calculated flight plan is advantageous, such as landing at an intermediate field, he issues orders for the pilot to land. Since every known contingency has been considered

in the procedure laid down by the company in its instructions, the decision of the pilot and dispatcher are identical. Their first consideration is the safety of the flight.

However, there are times when in the opinion of the pilot, or flight dispatcher, or both, flights cannot operate with a large factor of safety. This may be due to fog, thunderstorms, icing conditions or generally low ceilings. Then the flight dispatcher must decide what to do with the flight. If a delay of a few hours will allow normal resumption of flight, the passengers are sent to a hotel and plans are definitely made for resuming at a stated time. If it appears that unfavorable weather conditions will persist for some time, the passengers are trained to some point enroute where they can again be picked up and the flight continued to its destination.

Twice a day the flight dispatcher, after consultation with the meteorologist, issues a flight advisory forecast in which probable flight movements for the succeeding fifteen hours are planned with regard to weather conditions. These are supplemented by two additional advisory forecasts at intermediate periods and are corrected if weather conditions become substantially changed during the period. Thus the flight dispatcher is able to plan his operations over a period of time in addition to keeping a close supervision of flights actually operating.