

was awarded the New York-Miami route in August, 1956. Before beginning this operation, on Jan. 9, 1957, with leased aircraft, the carrier had sent a selected number of its pilots to DC-6 and DC-7 transition schools; a hundred or more of its personnel also attended maintenance courses of the aircraft manufacturer's school. Northeast Airlines had inaugurated its own DC-6 pilot and mechanic training courses and set up a flight dispatch system for the new route.

Both pilots of Flight 823 had been captains of Northeast Airlines for over 14 years and both had acted in pilot supervisory capacities. Capt. Marsh had been pilot in command for several thousand hours on four-engine aircraft for military contract operations during World War II. He had a total of 85 hr. on DC-6 aircraft, of which 25 hr. were acquired in December, 1956, at the DC-6 transition course of a major air carrier; 56 hr. were acquired during January, 1957, in NEA pilot checks and scheduled flights between Boston, New York and Miami. Capt. Marsh had flown DC-6 aircraft exclusively during these two months. Investigation indicated that the instrument panel arrangement, and the instruments themselves, of the aircraft in the transition school and the Northeast aircraft were not identical. His actual DC-6 instrument time, as testified, was approximately 10 hr. during training and checkouts and from five to 15 hr. during scheduled operations. Capt. Marsh acquired a rating on DC-6 and DC-7 aircraft from the Civil Aeronautics Administration upon completion of the transition course. Capt. Marsh had been in command of two Northeast Airlines Convairs involved in accidents at La Guardia Field. One, in 1952, was found by the Board to be the result of pilot error culminating in a water landing during final approach. The other, in 1953, was determined by the Board to have been caused by propeller malfunctioning during the landing. Neither resulted in fatalities.

Capt. Marsh underwent thorough medical examinations and flight checks after each of the above accidents. These examinations and flight checks disclosed no traits detrimental to airline piloting. With the exception of a short period after the 1952 accident, Capt. Marsh remained on continuous flight duty, without incident, until the accident of Feb. 1, 1957.

Cleared to Miami

Flight 823 was released by Northeast Airlines dispatch at Miami at 1301 to fly from La Guardia to Miami via airways on an instrument flight plan with the alternate West Palm Beach. Fuel was 18,000 lb. Maximum gross weight authorized was 97,275 lb. This figure was computed for runway 4 by adding 3,275 lb. to the basic figure of 94,000 lb. for this runway. The release for Flight 823 was based on the 1230 La Guardia weather, which showed a temperature of 34F (allowing 1,375 lb. to be added to the basic figure) and a wind direction of northeast 11 kt. (using only 10 kt. of this permitted an additional 9,000 lb. to be added to the basic figure).

The maximum allowable weight was recomputed and found to be 98,840 lb. with consideration for runway gradients, wind velocity, and temperature. The gross weight

of N 34954 at takeoff was 98,575 lb., or 265 lb. under the maximum.

Northeast Airlines' minimums for DC-6 aircraft takeoffs on runway 4 at La Guardia are: Ceiling 100 ft., visibility one-quarter mile.

Flight 823 was scheduled for a 1445 departure but was delayed to clean the aircraft of snow. Northeast Miami dispatch continued to monitor the La Guardia weather. At 1750 La Guardia company radio advised Miami dispatch that the aircraft was leaving the hangar and proceeding direct to runway 4 for takeoff. At 1804 La Guardia company radio advised Miami that the flight was off the ground at 1801. At 1825 Miami dispatch requested further information on the progress of Flight 823, and was advised of the reported crash.

The surface temperature at La Guardia held steady at 31F from 1423 through 1729 and dropped one degree to 30F between 1729 and 1823. The temperature at 500 ft. was approximately 28F, falling to about 25F at 2,000 ft. and returning to about 28F at 5,000 ft. Above 5,000 ft., the temperature gradually decreased. Below freezing temperatures existed at all altitudes.

Snow, Fog

The relative humidity at the surface had been 94% or greater after 1323 and reached 100% by the 1724 observation. Very light snow began at La Guardia at 1202 changing to light snow at 1238 and continuing throughout the remainder of the day. By 1915 four inches of snow had fallen. Fog began at La Guardia at 1349 and continued throughout the rest of the day.

From 1350 until after the accident, ceilings ranged from 500 to 800 ft. and visibilities varied from three-eighths to three-fourths mile. At 1753 the La Guardia observation was: Precipitation ceiling 500 ft., sky obscured; visibility $\frac{3}{4}$ mi.; light snow and fog; wind north-northeast 10 kt.; altimeter 30.12. At 1806 the La Guardia precipitation ceiling had risen to 800 ft. and the wind had increased to 15 kt. Other items remained constant.

The regularly scheduled terminal forecast for La Guardia Field issued at 1122 for the period 1700-2300 forecast ceiling of 400 ft. and occasionally 300 ft., sky obscured; visibility one mile, occasionally $\frac{3}{4}$ mi.; with a mixture of rain, snow, sleet, and fog and occasional freezing rain. An amendment to this forecast, issued at 1350 valid for the period 1350 to 2300, forecast ceilings 400, occasionally 300 ft., sky obscured; visibility $\frac{1}{2}$ mi. variable $\frac{1}{4}$ mi.; with light to moderate snow and fog and occasional sleet mixed. The next regularly scheduled terminal forecast for La Guardia Field issued at 1722, valid for the period 1800 to 2200, called for ceiling 600 variable to 300 ft., sky obscured; visibility $\frac{1}{2}$ variable to $\frac{1}{4}$ mi.; with light snow and fog.

When the aircraft was at the loading ramp, maintenance personnel started clearing it of snow. But continuing snowfall nullified this effort and about 1600 the aircraft was taxied, with passengers and crew, to a nose hangar near the Marine Terminal of La Guardia Field. There a crew of 12 men removed snow from the aircraft surfaces using brooms and an ice preventive fluid. All areas except a small portion on

top of the fuselage cabin section were cleared. The fuselage aft of the trailing edges of the wings protruded through the canvas curtain of the nose hangar and was thus exposed during the operation. Testimony of maintenance personnel indicates that all horizontal tail surfaces were cleared of snow and ice preventive fluid was applied. At this time the rudder hinges were inspected for snow accretion.

After satisfactory inspection, the aircraft was turned over to the flight crew at 1745. During the taxiing to the runway position and during the takeoff roll snow was not sticking to the cleaned surfaces but was being blown off by propeller blast and movement of the aircraft, according to testimony of the flight crew and passengers. There was also testimony that other aircraft that had been parked outside and exposed to snowfall for a longer period accumulated snow on horizontal surfaces, but no ice.

Capt. Marsh stated that the takeoff roll, except for some sliding of the nose wheel at low speed, was normal and the aircraft became airborne after a normal ground run. He also stated that the landing gear was retracted immediately after becoming airborne and then, with a good rate of climb established, the wing flaps were retracted; further, that he remained on "solid" instruments from the boundary of the field until First Officer Dixwell exclaimed, "Al, ground!" Marsh said that at no time did any of the pertinent instruments on his panel indicate anything but a straight flight out the heading of runway 4 and in a climb with airspeed in the order of 135 kt.

First Officer Dixwell stated that he had been monitoring his own instruments and that his observations were the same as the captain's up to the time that his attention was given to the flight engineer starting the first power reduction. Both pilots stated there was no indication of a turn, from their instruments, and they did not physically sense a turn or abrupt movement of the aircraft. Capt. Marsh said that his first thought after coming to a stop was that they were near the La Guardia range station or the Bronx tank.²

Escape Routes

Very soon after the aircraft came to a stop the captain and copilot got out through the left cockpit window; the flight engineer via the right side crew door. These three testified that they were then unable to get on either wing to open emergency exits because of flames on both sides of the fuselage at the wing section. They assisted the egress of persons from other areas. A number of passengers seated in the forward part of the cabin were able to get out through a gaping hole torn in the left lower side of the cabin. Toward the rear of the cabin the stewardesses and many passengers were able to use window exits as well as a hole torn open on the right side of the cabin. Others opened emergency exits on the right side and got out on the right wing before the fire had developed to large proportions. The main cabin door had jammed because of fuselage deformation and could not be opened by the cabin attendants. Testimony indicated that those leaving the aircraft did so in less than two

²A large gas holder across Long Island Sound.