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# AIRCRAFT ACCIDENT REPORT

CONTINENTAL AIR LINES, INC.

Boeing 707-320C, N47330

FLOYD FLYING SERVICE

Cessna 150J, N61011

Compton, California

August 4, 1971

NATIONAL TRANSPORTATION SAFETY BOARD



NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D. C. 20591

REPORT NUMBER: NTSB-AAR-72-5

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16. Abstract On August 4, 1971, at 2123 Pacific daylight time, Continental Air Lines, Inc., flight 712 (CO 712), a Boeing 707-320C, N47330, on a regularly scheduled flight from Hilo, Hawaii, to the Los Angeles International Airport, Los Angeles, California, and a Cessna 1505, N61011, collided in midair. The collision occurred over Compton, California, approximately 9 miles east-southeast of the Los Angeles International Airport. There were 87 passengers, a flightcrew of three, and six cabin attendants aboard the Boeing. There were no injuries. Two persons were on board the Cessna, a pilot-instructor and a student pilot. The instructor received serious injuries and the student received minor injuries. The National Transportation Safety Board determines that the probable cause of this accident was the minimum opportunity for the flightcrews to see and avoid the other aircraft due to the background lights behind the Cessna and the decrease in the Cessna pilots' visual field resulting from the aircraft's wing while turning.					
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CONTINENTAL AIR LINES, INC., FLIGHT 712  
BOEING 707-320C, N47330  
FLOYD FLYING SERVICE  
CESSNA 150J, N61011  
COMPTON, CALIFORNIA  
AUGUST 4, 1971

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SPECIAL NOTICE

This report contains the essential items of information relevant to the probable causes and safety messages to be derived from this accident. However, for those having a need for more detailed information, the original factual report on the accident is on file in the Washington office of the National Transportation Safety Board. Upon request the report will be reproduced commercially at an average cost of 15¢ per page for printed matter and 75¢ per page for photographs, plus postage. (Minimum charge \$1.00.)

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NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D. C. 20591  
AIRCRAFT ACCIDENT REPORT

Adopted: December 29, 1971

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CONTINENTAL AIR LINES, INC., FLIGHT 712  
BOEING 707-320C, N47330  
FLOYD FLYING SERVICE  
CESSNA 1505, N61011  
COMPTON, CALIFORNIA  
AUGUST 4, 1971

SYNOPSIS

On August 4, 1971, at 2123 Pacific daylight time, Continental Air Lines, Inc., Flight 712 (CO 712), a Boeing 707-320C, N47330, on a regularly scheduled flight from Hilo, Hawaii, to the Los Angeles International Airport, Los Angeles, California, and a Cessna 1505, N61011, collided in midair. The collision occurred at an altitude of approximately 3,950 feet over Compton, California, approximately 9 miles east-southeast of the Los Angeles International Airport.

There were 87 passengers, a flightcrew of three, and six cabin attendants aboard the Boeing. There were no injuries. Two persons were on board the Cessna, a pilot-instructor and a student pilot. The instructor received serious injuries and the student received minor injuries.

The Cessna was destroyed by the midair collision and subsequent ground impact. The Boeing received substantial damage to the outer right-wing panel.

The National Transportation Safety Board determines that the probable cause of this accident was the minimum opportunity for the flightcrews to see and avoid the other aircraft due to the background lights behind the Cessna and the decrease in the Cessna pilots' visual field resulting from the aircraft's wing while turning.

The Safety Board believes that it is an unsafe practice to engage in student familiarization flights in high-density traffic areas at night. Prior to any such flight, the student and the instructor should familiarize themselves with traffic flow patterns in the area in which they intend to fly. Midair collision accidents can be avoided only by the exercise of extreme vigilance on the part of flightcrews.

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The Board recommends that the Federal Aviation Administration disseminate this report to all pilot schools and bring this message to the attention of all flight instructors.

INVESTIGATION

Continental Air Lines Flight 712 departed from Hilo, Hawaii, on schedule (1400 P.d.t.). 1/ According to the crew, the flight was routine. At 2118, a handoff of the Boeing was received from the Los Angeles Center Arrival Handoff Controller by the Los Angeles Arrival Radar Sector 3 (AR-3). At this time, the Boeing was 4 miles southwest of the San Pedro Intersection descending to 8,000 feet 2/ on an assigned heading of 360°. The Boeing established communications with the AR-3 controller at 2118:45.

At 2119:35, the controller issued a new heading of 015°, and at 2120:15 cleared the flight to descend to 4,000 feet. The captain of the Boeing acknowledged receipt of these transmissions. The AR-3 controller advised the Boeing, "This will be a visual approach Runway 25R, over, traffic 12 o'clock, 2 miles northwest bound." The captain responded, "Continental 712 cleared for approach?" -- whereupon the controller replied, "No, this will be a 25R visual approach and report the airport in sight." The captain then stated he had the airport in sight.

At 2122, the Boeing was instructed as follows: "CO 712 turn left heading 340, you'll be following a Capitol jet 11 o'clock and 6 miles on final now, report him in sight and the airport please for the left." The captain then asked, "Are we for the left or the right ...?" The controller answered, "You're for the left, sir, traffic at one o'clock and 7 miles is for the right." The Boeing responded, "Okay, sir, we got him, thank you." The flight was then asked, "Do you see the traffic you're following at 11 o'clock and 5 miles?" The captain replied that they had seen the aircraft, but did not see him at the present time. The flight was then advised to adjust its airspeed to 180 knots.

At 2123, the Boeing was advised of traffic at 11 o'clock, 1 mile northwest bound. The captain's reply was, "Roger." At 2123:45, the controller asked whether the Boeing could adjust its pattern to turn alongside a Jet at 3 o'clock and 3 miles. Shortly after this, the captain of the Boeing reported that he believed that they had just had a midair collision and was declaring an emergency. The Boeing was cleared to proceed directly to the airport and land on Runway 25L.

The flight was subsequently changed over to the local controller's frequency and landed on Runway 25R. After the landing and the turn off the runway, the captain stated to the ground controller, "I believe we got a small airplane out there just as we were turning final, looked like a Cessna."

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1/ All times herein are Pacific daylight based on the 24-hour clock.

2/ All altitudes herein are Mean Sea Level (m.s.l.).



Cessna 150J, N61011, was on a night training flight. It was the student's first familiarization flight. The instructor-pilot stated that they departed Compton Airport, Compton, California, at 2055, proceeded to the Palos Verdes Peninsula, and flew in that area for 15 to 20 minutes. They then headed north over San Pedro to a point one-quarter of a mile north of the Compton Airport at an altitude between 3,000 to 4,000 feet. He directed the student, who was in the left seat, to turn right to a southeast heading. As the aircraft reached a southeast heading the collision occurred. The instructor-pilot then took over the controls and landed the severely damaged aircraft in a field adjacent to a lighted, all-night golf course.

The collision occurred above a point approximately one-quarter of a mile northeast of Compton Airport, and 9 miles east-southeast of the approach end of Runway 25R at the Los Angeles International Airport, California. This is a densely populated area with bright ground lighting.

The instructor-pilot of Cassna N61011 stated that his aircraft had its position lights on and the rotating beacon operating at the time of the collision. He also stated that he had the radio on and was listening to Los Angeles Approach Control prior to the collision, but had turned the radio off prior to the collision. He did not see the Boeing prior to the accident and assumed command of the aircraft only after the collision. Only partial control of the aircraft was available to the pilot and the engine had stopped. The instructor-pilot stated that he believes his right ankle was broken in the in-flight collision, but could not remember when his left ankle was broken. The student-pilot said that he saw a bright light in the lower front part of the right door window a split second before impact.

The approach controller was a developmental controller <sup>3/</sup> insofar as his position of operation was concerned. Previously, he had been qualified at the departure radar position at Los Angeles Tower and, on August 4, 1971, was in the process of becoming qualified at the arrival radar position. He was being directly supervised at the Arrival Radar - Position 3 position by a qualified controller, who was also assigned to the arrival handoff position.

The Arrival Radar - Position 3 controller stated that he first observed the Cessna as a weak, primary target, and issued the information to the Boeing at 2123. He said the radar display (ASR-4 radar) was good and that his workload was light. His attention was diverted to other jet traffic on the final approach course and he did not observe the target of the Cessna again.

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<sup>3/</sup> Developmental Controller - a qualified specialist who is being trained for a new position or procedure for career development.

There were no reported difficulties with the radar system or displays.

The Los Angeles International Airport surface weather observation at 2100 was: Scattered clouds at 25,000 feet, visibility 8 miles, temperature 71°, dew point 67°, wind 210° at 7 knots, altimeter setting 29.84 inches.

There was only one witness to the in-flight collision. A policeman, located 1/3 of a mile from the in-flight collision area, stated that he saw the large jet aircraft flying north-northwest with a large white light similar to a large flood light. Also, he saw the smaller aircraft flying on what appeared to have been a westerly heading at a high altitude. He heard a noise that sounded like a thump as the two aircraft appeared to be close together. The jet aircraft continued on its course, but he lost sight of the smaller aircraft.

Both the Cockpit Voice Recorder (CVR) and the Flight Data Recorder (FDR) were removed from the Boeing and were forwarded to the Safety Board's Washington office for readout. No recorders were carried on the Cessna, and none were required. The CVR tape did not have a record of cockpit conversation at the time of the collision since it continued to run and only the last 30 minutes of conversation is retained on the recording. The Flight Data Recorder indicated that the collision altitude was approximately 3,950 feet and the Boeing aircraft was on a heading of 340° magnetic, descending at a rate of approximately 2,000 feet per minute for the 30 seconds prior to the collision. Due to a malfunction in the Pitot system for the FDR, the airspeed could not be determined. All other recording parameters of the FDR were considered accurate. The captain of the Boeing said that the airspeed was 180 knots (indicated) at the time of the collision.

#### ANALYSIS

Examination of the two aircraft and the tape from the Boeing's HDR indicated that the impact angle was 25° to the right of the longitudinal axis of the Boeing. At the time of impact, the Boeing and the Cessna were on headings of 340° and 135° magnetic respectively. The impact damage showed that the main wheels of the Cessna struck the leading edge and upper surface of the right wing of the Boeing.

At 2123, the Boeing was advised of traffic at 11 o'clock, 1 mile northwest bound, which was the Cessna. At 2123:45, the Boeing was asked if it could adjust its pattern to turn alongside of a jet at 3 o'clock and 3 miles. Shortly after this transmission, the Boeing Captain reported the collision. Since the exact time of impact is unknown and the precise flightpath of the Cessna cannot be determined, the rate of closure is unknown. The final closure rate, however, would be in excess of 180 knots,

the speed of the Boeing. The Cessna was initially on a northwesterly heading and made a right turn to a southeasterly heading (135°) just prior to the impact.

Although the Cessna had both its position lights and its rotating anticollision light on, the flightcrew of the Boeing failed to see the target. The relative positions of the two airplanes would place the Cessna target in front of a background of the bright lights of the western Los Angeles area. With this lighted background it would have been extremely difficult for the crew of the Boeing to detect the Cessna lights even after they were advised of the traffic.

The Boeing flightcrew was given little time to concentrate on any given traffic. At 2120:15, traffic was given as 12 o'clock, 2 miles northwest bound. At 2122, the Boeing was told to follow Capitol located at 11 o'clock, 6 miles on final, then advised of traffic at 1 o'clock, 7 miles for 25 Right. The Boeing was then asked if it had traffic 11 o'clock, 5 miles. At 2123, the Boeing was advised of traffic at 11 o'clock, 1 mile northwest bound and finally at 2123:45 the captain of the Boeing was asked if he could adjust his pattern to turn alongside a jet at 3 o'clock, 3 miles. The Board believes that this last transmission may have distracted the Boeing flightcrew from visually scanning for the Cessna target just prior to the collision.

The Cessna, on the other hand, 1 minute prior to the collision, was headed in the same general direction as the Boeing. It proceeded to make a right turn from a northwesterly direction to a heading of approximately 135°. Normally, the pilot on the right side -- in this case, the instructor-pilot -- would be expected to observe the on-coming Boeing. The high wing of the Cessna 150 would block a considerable portion of field of vision to the right and up when the airplane is in a right bank. The Boeing descending at about 2,000 feet per minute would probably not have been detectable by the Cessna occupants during most of the turn. At sometime, however, the instructor-pilot should have observed the landing lights of the Boeing. He was certainly in a better position to see these lights than the student-pilot in the left seat who did observe the lights just prior to impact in the lower front part of the right door window.

The Board believes that the instructor-pilot should have been continually vigilant to the possibility of conflicting traffic throughout the right turn.

The Board believes that the Cessna instructor-pilot used poor judgment in giving a student-pilot his first familiarization flight at night and in a heavily congested air traffic area.

The level of training and experience of the controller assigned to this sector was adequate, even though he was classified as a developmental

controller insofar as this position of operation was concerned. He was under direct supervision of a qualified controller at the time of the collision.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of this accident was the minimum opportunity for the flightcrews to see and avoid the other aircraft due to the background lights behind the Cessna and the decrease in the Cessna pilots' visual field resulting from the aircraft's wing while turning.

RECOMMENDATION

The National Transportation Safety Board believes that it is an unsafe practice to engage in student familiarization flights in high-density traffic areas at night. Prior to any such flight, the student and the instructor should familiarize themselves with traffic flow patterns in the area in which they intend to fly. Midair collision accidents can be avoided only by the exercise of extreme vigilance on the part of flightcrews.

The Board recommends that:

The Federal Aviation Administration disseminate this report to all pilot schools and bring this message to the attention of all flight instructors.

**BY THE NATIONAL TRANSPORTATION SAFETY BOARD:**

/s/ JOHN H. REED  
Chairman

/s/ OSCAR M. LAUREL  
Member

/s/ FRANCIS H. McADAMS  
Member

/s/ LOUIS M. THAYER  
Member

/s/ ISABEL A. BURGESS  
Member

December 29, 1971

APPENDIX A

INVESTIGATION AND HEARING

1. Investigation

The Board received notification of the accident about 2200 on August 4, 1971. An investigation team was dispatched immediately to the scene of the accident. Working groups were established for Operations, Air Traffic Control, and Airworthiness. Parties to the investigation included: Continental Air Lines, Inc., the Federal Aviation Administration, Air Line Pilots Association, and The Boeing Company.

The on-scene investigation was completed on August 12, 1971.

2. Hearing

There was no public hearing.

APPENDIX B

CREW INFORMATION

The crew history of Flight 712 follows:

Captain Harold Ross held a valid Airline Transport Certificate, No. 498084, and a First-class Medical Certificate (Limitation - Holder shall wear correcting glasses while exercising the privileges of his Airman Certificate). He was wearing glasses at the time of the collision.

First Officer Carmen W. Swenson held a valid Airline Transport Certificate, No. 1562948, and a First-class Medical Certificate (No limitations). He had a total of 5,000 hours, 3,000 of which were in the type aircraft.

Flight Engineer George T. teonhardt, Jr., held a valid Commercial Pilot's Certificate, No. 1722852, a valid Flight Engineer's Certificate, No. 1756872, as well as a current First-class Medical Certificate. He also holds ratings for rotorcraft and instruments. He had a total of 8,600 hours flying time, of which 4,200 hours were in the type aircraft.

The Cessna crew follows:

Instructor Pilot Arthur E. Wright, aged 26, pilot of Cessna 150J, N61011, holds a valid Commercial Pilot's Certificate, No. 1745739, and a Second-Class Medical Certificate, dated April 4, 1971, with no limitations. In addition, he holds a Flight Instructor Rating, and had a total of 376.5 hours, with 212.1 hours in the Cessna.

This was the first familiarization training flight for Student Pilot Leo Walter Hopp.