File No. 2203-43

Docket No. SA-79

Adopted: March 25, 1944

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REPORT OF THE CIVIL AERONAUTICS BOARD

On the investigation of a mid-air collision between two aircraft engaged in local instruction flights, which occurred near Wichita, Kansas, on June 3, 1943.

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REPORT OF THE CIVIL AERONAUTICS BOARD
on the
Investigation of a Mid-Air Collision Between Two
Aircraft Engaged in Local Instruction Flights

A mid-air collision which occurred about one-quarter mile north of the Municipal Airport, Wichita, Kansas, at approximately 4:40 p.m. on June 3, 1943, resulted in fatal injuries to Instructor Donald Frank Betzer and Student Clinton LeRoy Alguire. Instructor Harry Irving Hutton and Student Eugene Louis Tembrink escaped injury. The two airplanes, both Pipers, were of United States registry. NC 40826, a Piper J3F-65, owned by the Harte Flying Service, Inc., was demolished. NC 23275, a Piper J4A, owned by John A. McCullough, Trustee for Aero Parts Flying Club, received minor damage.

CONDUCT OF INVESTIGATION

The Washington Office of the Civil Aeronautics Board (hereinafter referred to as the Board) was notified of the accident and immediately dispatched Air Safety Investigator Alexander E. Cabana from the Kansas City Office of the Safety Bureau of the Board to the scene. He arrived there on June 4, the following day. The Board initiated an investigation in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. In connection with this investigation, a public hearing was held on June 9, 1943, in Wichita, Kansas. William K. Andrews, Chief, Investigation Section, Safety Bureau, served as presiding officer and the following personnel of the Safety Bureau participated in the hearing: Raymond P. Parshall, Senior Air Safety Investigator, Alexander E. Cabana, Air Safety Investigator, and Walter Hinton, Reports Editor.

On the basis of all the evidence resulting from the investigation and hearing, the Board now makes its report in accordance with the provisions of the Civil Aeronautics Act of 1938, as amended.

SUMMARY AND ANALYSIS OF EVIDENCE

Flight Personnel

Donald Frank Betzer, age 21, held a commercial pilot certificate with single-engine land, 0-330 h.p., and flight instructor ratings. He had accumulated approximately 1050 hours of flight time, which included about 700 hours since being employed as a flight instructor by the Harte Flying Service, Municipal Airport, Wichita, Kansas, on July 14, 1942. Betzer's student, Clinton LeRoy Alguire, a War Training Service trainee, had completed his preliminary ground instruction, had had 45 minutes of dual instruction, and was just completing his second 45-minute dual instruction period with Instructor Betzer when the accident occurred.

Harry Irving Hutton, age 50, held a commercial pilot certificate with single-engine land, 0-340 h.p., and flight instructor ratings. He had accumulated approximately 3248 hours of flight time, about 123 of which were flown after he was employed by the Aero Parts Flying Club, Inc., Municipal Airport, Wichita, Kansas. Hutton's student, Eugene Louis Tembrink, had received approximately 8 hours of dual instruction.

History of the Flights

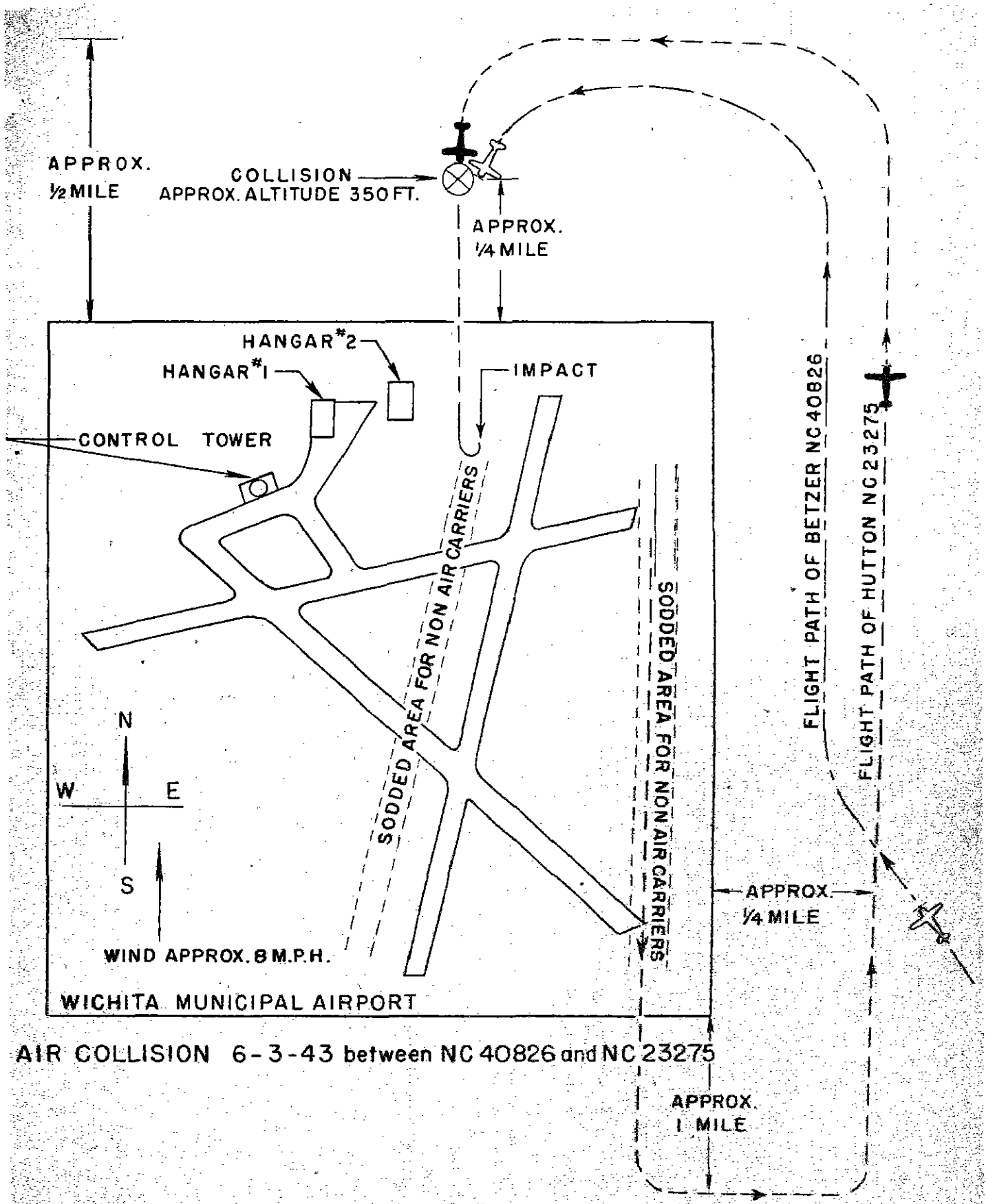
Instructor Hutton and Student Tembrink, flying NC 23275, were engaged in take-off and landing practice at the Wichita Municipal Airport. Shortly before 4:40 p.m., on what was to be their final landing, they were proceeding westward in a normal glide with the engine throttled, on the base leg[1/] of the rectangular traffic pattern. At an altitude of approximately 800 feet, according to Hutton, they received a green light from the air traffic control tower indicating all clear to land. Hutton then took over the controls from Student Tembrink and acknowledged the green light by rocking his wings. At about the same time Instructor Betzer and Student Alguire, flying NC 40826, were returning to land at the Wichita Municipal Airport. They entered the rectangular traffic pattern about midway of the long, downwind leg and proceeded north to the base leg of the pattern. (See sketch opposite page.) While turning west into the base leg, Betzer also received and acknowledged a green light to land from the air traffic control tower. Hutton testified that as he continued west on the base leg of the pattern, he was given another green light from the control tower, which he acknowledged; that he then made a 90° left turn to the south, at an altitude of between 600 and 650 feet, and proceeded in a normal glide approach preparatory to landing. In the meantime, Betzer had made his 90° turn and proceeded west on the base leg until he reached a point about one-quarter of a mile north of the airport boundary and, as he was making his final 90° turn south onto the approach leg, at an altitude of approximately 350 feet, the flight paths of the two aircraft intersected. As Hutton's plane was letting down at the time of the collision, his left landing gear struck the right wing of Betzer's plane and Betzer's right wing contacted the bottom of the fuselage of Hutton's plane. Hutton pulled up into a right climbing turn and the two planes separated. Betzer's plane, apparently uncontrollable with its right wing badly damaged, fell off. After completing two turns of a left spin it struck the ground on its nose and left wing at an angle of about 60° in a field adjoining the airport. Hutton glided to a safe landing on the airport, pivoted on the damaged landing gear and stopped, headed north.

The occupants of both aircraft were equipped with parachutes. Neither of the planes was equipped with radio. Both flights had been properly cleared. The weather was suitable for contact flight and was not a contributing factor to the accident.

Examination of the Wreckage

Examination of the wreckage disclosed marks on each aircraft which indicated that about 17" of the tip of the rear spar of the right wing tip of Betzer's plane had penetrated, broken off, and remained in the bottom of the fuselage of Hutton's plane, under the pilot's seat. The left landing wheel of Hutton's plane had broken through the upper surface of the right wing of the other aircraft at Number 1 and 2 compression struts, just forward of the rear spar inboard from the wing tip. The impact of the wheel into this wing completely demolished and tore out all ribs and

1/ The base leg of a traffic pattern is the semi-final leg of the course before turning onto the approach or final leg on which the landing is to be effected.



AIR COLLISION 6-3-43 between NC 40826 and NC 23275

interbracings from the compression struts to the wing tip, presumably as the two planes separated. There was no indication of failure of any part of either aircraft prior to the collision.

Witnesses

Opinions of witnesses, most of whom were well qualified because of their aviation experience, differed slightly regarding the attitude of the two planes just prior to the collision. As the two aircraft were of the same make and color, the different angles at which the collision was observed could account for the difficulty of the witnesses in differentiating between the two. However, these opinions agreed generally in that when first observed by witnesses on the ground, both planes were flying west on the base leg, Hutton slightly higher and losing some altitude in his glide, and Betzer flying level and behind Hutton. Hutton then turned onto the approach leg and was proceeding in a normal glide still banked slightly to the left and headed almost due south, while Betzer, in the lower plane, was in a left turn headed in a southwesterly direction, banked at an angle of about 30°, when the two planes collided.

Although the chief traffic control operator was present in the control tower previous to and at the time of the accident, he was preoccupied and did not participate in the direction of traffic in any way. The assistant control tower operator on duty testified that he first observed Hutton headed south on a straight-in landing approach and gave him a green light to land but that this signal was not acknowledged; that he first observed Betzer when he was headed north on the downwind leg of the traffic pattern and gave him a green light while Betzer was turning into the base leg, and that this light was acknowledged; that he observed Hutton still heading south on his landing approach and that he gave Hutton a second green light, which was acknowledged. This testimony of the control tower operator does not agree with that of Hutton and Student Tembrink, who testified that they received the first green light just after entering the base leg of the traffic pattern and the second green light just before they made their final turn into the approach leg, and that they acknowledged both of these light signals. It is possible that Hutton and Betzer were receiving and acknowledging the same green lights as having been directed to them, as Hutton and his student testified that they observed no other aircraft in the air while flying the base leg or after they had headed south on the approach leg, until the instant of the collision. The assistant control tower operator testified that he had believed Betzer's plane, which was still headed westward on the base leg, to be nearer the field than Hutton's, which was already approaching to land; that even with the two planes in this relative position, he expected Betzer to land first. When asked at the hearing if he felt sure in his own mind that both of these planes were going to land in the sodded area west of the north-south runway, he answered in the affirmative. When requested to explain exactly what occurred after he had given the green lights to both aircraft, he answered, "It was observed that both aircraft received their signals. I then, as far as my duties, turned to the other part of the traffic pattern to observe what traffic was coming in. There were also three aircraft preparing to depart . . . on the ground. Two in the parking area and one airliner on the ramp. These aircraft to depart would taxi very likely on the east-west runway to take off south on the north-south runway." He explained that this would necessitate these planes being taxied across the area where Hutton and Betzer were intending to land. He testified that, "After observing the rest of the traffic

pattern and the aircraft preparing to depart, to my satisfaction, I glanced north on the field to see if any other aircraft were approaching to land." When asked if there were any planes approaching, other than the two he cleared to land, he answered, "No, sir." He stated, however, that he did observe aircraft southeast of the field after giving the two approaching planes permission to land.

It was brought out at the hearing that another plane was in the air at the time on the downwind leg of the traffic pattern, following Betzer's plane at a distance estimated by its pilot to have been between one-quarter and one-half mile. This pilot, who also witnessed the collision, testified that he received no lights from the tower but proceeded on his approach after the collision and landed.

The assistant control tower operator stated that he believed the two aircraft he cleared to land were the two involved in the accident.

Air Traffic Control

The Wichita Municipal Airport has a rectangular traffic pattern used by operators for training purposes. Traffic control instructions naturally vary somewhat with the wind direction. On the day of the subject accident the wind was from the south and, accordingly, light aircraft engaged in take-off and landing practice were to use the sodded area east of the north-south concrete runway, except for their original take-off and final landing which could be made on the west side. Light aircraft engaged in other training operations were to be taken off and landed on the sodded area west of the concrete runway (the concrete runways are not used by light aircraft unless equipped with a radio receiver.) It is naturally the duty of the traffic controller to space safely all incoming and outgoing traffic. However, with the landing traffic practice at this airport, wherein they use the sodded area west of the runway, the concrete runway, and the sodded area east of the runway, there appears to be no way in which the control operator can know definitely in which area one or more incoming planes are preparing to land and, therefore, he cannot with a full degree of safety clear aircraft to land. Due to this difficulty, it seems impracticable to attempt to control traffic at this airport by the use of light signals.

The CAA Federal Airways Manual of Operations, Air Traffic Control Division, outlined on December 3, 1942 a General Warning Signal, consisting of a series of alternating red and green flashes, to be used by Air Traffic Controllers when unusual traffic conditions occur. In this instance the warning signal was not used. Subsequent to the accident, on June 19, 1943, the Administrator issued detailed instructions to all CAA Regional Managers regarding the use of this warning signal.

Findings

1. The mid-air collision occurred about one-quarter mile north of the Municipal Airport, Wichita, Kansas, at approximately 4:40 p.m. on June 3, 1943, and resulted in fatal injuries to Instructor Betzer and Student Alguire, while Instructor Hutton and Student Tembrink escaped injury.

2. Examination of the wreckage revealed no indication of failure of any part of either aircraft prior to the collision.

3. The weather was suitable for contact flight and contributed in no way to the accident.

4. From the testimony of Hutton and Tombrink, it is evident that they observed no other traffic during their flight on the base leg or their final approach to the field. There is no way of ascertaining whether or not Betzer or his student observed Hutton's plane prior to the collision.

5. The general warning traffic signal was not used in this instance by the control tower operator on duty.

CONCLUSIONS

From all of the evidence accumulated it is apparent that the control tower operator on duty must have misjudged the close proximity of the two aircraft and was mistaken as to their respective positions when he gave both of them the "clear to land" green light signal. Had the control tower operator been alert to his duties he would have observed the flight paths of the two planes converging and would have immediately given one or both pilots the general warning signal or a red light directing them both to continue circling until such time as he could space the flights properly.

The light signal method of traffic control for aircraft, as practiced at this airport, is apparently inadequate to space and direct landing traffic safely inasmuch as the controller has no way of knowing at what point a pilot will make his turn for a final approach or on which side of the runway he may be preparing to land.

PROBABLE CAUSE: Error in judgment of the control tower operator in clearing both planes to land when their flight paths were converging.

CONTRIBUTING FACTOR: Lack of vigilance on the part of both pilots in failing to observe and avoid the other.

APPROVED:

/s/ L. Welch Pogue
L. Welch Pogue

/s/ Edward Warner
Edward Warner

/s/ Oswald Ryan
Oswald Ryan

/s/ Josh Lee
Josh Lee

Harllee Branch, Member of the Board, did not take part in the decision.