CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: December 3, 1952

Released: December 9, 1952

ACCIDENT INVOLVING CESSNA 140, N 72505 - PHILIP BILLARD AIRPORT
TOPEKA, KANSAS, MAY 12, 1952

The Accident

At 1620,[1] May 12, 1952, a Cessna 140, N 72505, crashed on Runway 35 at Philip Billard Airport, Topeka, Kansas, 600 feet south of intersecting Runways 35 and 13. The aircraft crashed from a steep climb following takeoff. The pilot survived the accident, but his passenger was fatally injured. The aircraft was demolished.

History of the Flight

The Cessna 140, occupied by student pilot John C. Middlemass in the left seat and passenger Robert E. Pierson in the right, took position for takeoff on Runway 35 at the intersection of Runway 4 following the takeoff of a Cessna 170, N 2357D.[2] The gross weight with the two occupants was less than the maximum permissible gross takeoff weight and the load was properly distributed with relation to the center of gravity of the aircraft.

The Cessna 140 was equipped with two-way radio but it was not being used; therefore the aircraft was cleared for takeoff by a green light signal from the tower. A normal takeoff was made. Shortly after becoming airborne, Pilot Middlemass observed a Trans World Airlines' Martin 202A approaching from the northwest. His first impression was that the Martin was descending for a landing on Runway 13. Believing that collision was imminent, he continued on the same heading but placed the 140 in a steep climb, intending to pass over the apparent flight path of the Martin. Within seconds the Cessna 140 stalled, then crashed on Runway 35. Both occupants were critically injured. They were immediately taken to a Topeka hospital, where Mr. Pierson died a few hours later.

1/ All times referred to herein are Central Standard and based on the 24-hour clock.

2/ See attachment.

The Investigation

At the time the Cessna 140 crashed there were three other aircraft operating in the immediate vicinity of the airport.3/

TWA Check Flight 211, a Martin 202A, N 93201, departed Kansas City, Missouri, at 1500 with Captains Roy L. Thrush and Wilbur N. Knudsen aboard, for the purpose of giving Captain Knudsen a six-month instrument check. After completing the "air work" portion of the check in the vicinity of Lawrence and Perry, Kansas, the flight contacted the Topeka tower and requested permission to make some simulated ILS approaches, which was approved. At the time TWA reported over the ILS outer marker inbound on the first approach, the flight was asked if it desired clearance for a low approach or wished to land. The pilot advised that a landing was desired, and was cleared accordingly. Captain Knudsen made a simulated ILS approach with the instrument hood installed down to a 300-foot altitude at the middle marker, removed the hood, went contact, and circled the southern side of the airport in a left-hand traffic pattern, landing on Runway 31. One circuit of the airport was made after the initial landing and the flight again landed on Runway 31. Following the second takeoff, the flight proceeded to the ILS outer marker. A procedure turn was made and the flight reported inbound when the outer marker was again intercepted. The airport traffic controller replied, "TWA TWO ELEVEN OUTER MARKER INBOUND RUNWAY THREE ONE WIND IS NORTH VARIABLE NORTHWEST SEVEN ALTIMETER THREE ZERO ONE ONE." Captain Thrush stated that he considered this a clearance to make the approach; Mr. John J. Herman, the airport traffic controller, testified that it was clearance to make the ILS approach and enter the field traffic pattern for landing, but did not constitute clearance to land. All contacts with the tower, both transmitting and receiving, were on VHF (Very High Frequency).

The TWA flight continued the second simulated ILS approach to a point 300 feet above the ground at the middle marker. Captain Thrush stated that retraction of the extended landing gear and flaps was begun upon reaching 300 feet, shortly before arriving at the middle marker. The simulated ILS approach was made without the instrument hood installed. Captain Knudsen transferred his attention from simulated instrument flight to visual reference to the ground at the middle marker, whereupon Captain Thrush, in the first officer's seat, advised him to maintain his altitude, calling his attention to a Cessna 170 about 200 feet above and 3,000 feet to the left of the Martin 202A. According to the testimony of the TWA pilots, a slight left turn was initiated to turn to the proper heading for return to Kansas City. Captain Thrush stated that he was about to advise the airport traffic controller that they were leaving the traffic pattern when he saw a Cessna 140 at about 100 feet altitude and an estimated 1,000 feet to the right as they passed the intersection of Runways

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3/ The reader may be aided by the following enumeration of aircraft type, certification number, and pilot:

Cessna 140-N 72505 -- Mr. Middlemass

Martin 202A-N 93201-- Captains Thrush and Knudsen

Cessna 170-N 2357D -- Mr. Dellere

Cessna 195-N 4327V -- Mr. Ridpath

35 and 13 at 300 feet altitude. The Cessna was in an extremely steep climb. When the Martin was well past the intersection, Captain Thrush saw the Cessna 140 apparently stall, then strike the ground as it passed from sight beneath the right wing of the Martin. Neither pilot of TWA Flight 211 saw the Cessna 195 at any time. The TWA flight proceeded to Kansas City, and Captain Thrush reported his observations to the company after landing there at about 1650.

While the Martin 202A was proceeding inbound on the second simulated ILS approach, the airport traffic controller cleared a Cessna 170, N 2357D, for takeoff on Runway 35 from the intersection of Runways 35 and 4. Mr. Nick Dellere, the pilot, was transmitting on VHF and receiving on low frequency. He saw the Martin 202A at about the time he passed the north end of Runway 35 with the Cessna 170 at an altitude of 200-300 feet and the Martin in an approach between the middle marker and Runway 13 at about the same altitude. At about the same time he heard the airport traffic controller clear a Cessna 195, N 4327V, for takeoff on Runway 31. Making a climbing turn to the left at about 500 feet altitude, Mr. Dellere could see all of Runway 13-31, observed the Cessna 195 become airborne at about the intersection of Runways 31 and 4, and make a sharp turn to the right at low altitude. Returning his attention to the Martin, he saw that it was apparently continuing its approach. Only a few seconds later, the 202A appeared to make a sharp turn to the left at approximately the intersection of Runways 35 and 13. At the same time, Mr. Dellere noted the Cessna 140, which for a few moments appeared to be climbing. It stalled, then fell to the runway in a partial spin. Mr. Dellere circled the airport to the left and landed on Runway 31.

After carefully checking for any aircraft which might be approaching for landing on Runway 31, Mr. J. A. Ridpath, in a Cessna 195, N 4327V, took position for takeoff on Runway 31. Clearance to take off was granted by the airport traffic controller. Mr. Ridpath was using a low frequency transmitter and receiver in his contacts with the tower. At about 50 feet altitude he saw the Martin 202A inbound from the northwest, about one-half mile from the approach end of Runway 13, apparently in final approach for landing on Runway 13. Mr. Ridpath made a 45-degree right turn to clear the path of the oncoming TWA aircraft, then turning left, paralleled the runway about one-fourth mile to the north. The left turn to parallel the runway was made at about 75 feet altitude, and he continued to climb, passing the 202A at about the northwest corner of the airport when his aircraft was at an altitude of from 350 to 400 feet and the Martin at an estimated altitude of 100 feet. Mr. Ridpath then made a 90-degree left turn, followed by a 45-degree right turn out of traffic. Upon hearing the airport traffic controller say there had been an accident he returned, circling over the airport for a short time, then left for Wichita. Mr. Ridpath did not see the Cessna 140 until his return over the airport.

The Topeka tower is a combined tower and Interstate Airways Communications station. It was manned by Mr. Richard V. Whiteside, Senior Controller and supervisor of the watch, and Mr. John J. Herman. Investigation disclosed that the tower was adequately manned. The personnel assigned to that watch consisted solely of Mr. Whiteside and Mr. Herman. Mr. Whiteside was handling the "B" position (flight data) while Mr. Herman was stationed at the "A" position (local traffic control). Mr. Whiteside had just completed the 1615 weather broadcast and was at the teletype reviewing the content of incoming messages

when Mr. Herman called his attention to the Cessna 140 in an abnormal climb. According to Mr. Whiteside, the aircraft's attitude prior to the stall was about 60 degrees above the horizontal. He saw it stall, fall to the right and drop to the runway on the right wing and nose. At about the time the 140 reached its maximum altitude, the TWA aircraft came into his view at or near the intersection of Runways 35 and 13. Mr. Whiteside testified that, in his opinion, a collision between the 202A and the 140 was impossible, owing to the lateral and vertical separation of the aircraft.

Mr. Herman testified that he had assumed the Martin 202A would discontinue the second ILS approach at the middle marker, circle the field, and request clearance to land as it had previously done, thus he assumed that the Martin 202A would not be immediate traffic for aircraft taking off to the north and northwest, and proceeded to clear the other three aircraft for takeoff. After the TWA aircraft reported over the outer marker, the 140 was cleared for takeoff by light gun signal. Very shortly thereafter Mr. Herman observed the 140 in a very steep climb and also saw the 202A making a low approach across the field on a southeasterly heading at an estimated 300-400 feet altitude. The Cessna 140 attained an altitude of about 100 feet before it stalled, according to Mr. Herman. Mr. Herman did not have the 202A in sight at any point between the outer marker and the time it passed over the airport.

Two ground eyewitnesses to the accident advised that the maximum altitude attained by the Cessna 140 was 100-200 feet, only one saw the 202A as it passed over the airport and estimated its altitude at about 200 feet.

Both TWA captains and the pilot of the Cessna 195 testified that, in their opinion, there was no imminent danger of collision between any of the aircraft which they observed, since they felt that vertical and horizontal separations were adequate in all of those instances. Mr. Dellere testified that, in relation to the 202A, there was no danger of collision between the Cessna 195 and his aircraft, but observed that the Cessna 140 and the 202A appeared to be very close at the time he was in the traffic pattern to the west of the airport. In addition to Mr. Whiteside, Mr. Herman stated that there was no imminent danger of collision between the Martin and the Cessna 140. Investigation disclosed that separation between the Martin 202A and the Cessna 140 was in excess of 600 feet horizontally and 100-200 feet vertically. However, Mr. Middlemass stated that he believed there was danger of collision between his aircraft and the TWA aircraft.

Test flights established that the control tower and other buildings on the west side of Runway 35 would prevent a pilot on that runway from seeing an aircraft at or near the middle marker and at 300 feet altitude until the line of sight was elevated following takeoff, naturally, the converse also applies.

Investigation disclosed that none of the three aircraft in radio contact with the tower were advised of other traffic in the area of the airport traffic pattern.

Examination of the Cessna 140 failed to reveal any evidence of malfunctioning of the aircraft, engines, or flight control system prior to the accident. Both blades of the propeller were bent in a manner that indicated considerable power was being developed at impact. Dual controls were installed, both control wheels were found full rearward and the shafts were bent to the right. The throttle was found "open," mixture "full rich," carburetor heat "cold," flaps "up," radio "off," elevator trim "zero," and fuel valve on "right tank."

Pertinent local weather at the time of the accident was: sky clear, visibility 15 miles plus, temperature 70, wind north 4, altimeter 30.11, and a few cumulus clouds to the east.

Mr. Middlemass possessed a valid Student Pilot Certificate, No. SC 21254, issued on July 8, 1951. His total flight time as a pilot and student under instruction was approximately 90 hours.

Mr. Herman had been employed as a CAA Aircraft Communicator for nine years prior to beginning air traffic control duties as an Airways Operations Specialist at Topeka on April 10, 1951. He had completed the prescribed training courses for his position classification. He possessed an Aircraft Communicator Certificate and an Airport Traffic Control Tower Operator Certificate with a junior rating for the Topeka area, which entitled him to control VFR traffic. Mr. Herman advised that he had handled an estimated 10 simulated ILS approaches in his controller experience. The Topeka ILS had been used by TWA for training purposes for only a week prior to the accident, owing to a flood which made the airport facilities at St. Joseph, Missouri, unusable. Mr. Herman's employment history reflected that he was rated average, or in many instances above average, in performance of duties. His superiors stated that he had displayed adequate or above average ability in handling air traffic.

Analysis

In the over-all sense, it is clear that an unsafe traffic situation, or hazardous condition, existed. However, the preponderance of the evidence indicates that there was no imminent danger of collision between any of the aircraft involved because of the appreciable distance and time separation of each aircraft from the others.

As previously noted, Mr. Middlemass was a pilot of limited experience. His ability to properly judge what appeared to him to be a critical situation, then fly his aircraft in such a manner as to successfully meet the emergency was probably not of the order that could be expected of a more experienced pilot who would have developed finer judgment and would more fully realize the limitations of his aircraft as regards maximum climb performance. The Board offers no criticism of the course of action chosen by Mr. Middlemass, considering his inexperience. It is readily apparent, however, that the aircraft was climbed at too steep an angle at low speed, resulting in a stall; this is considered the primary factor in the accident.

Mr. Middlemass suffered a fractured skull and many other serious injuries. The rapidity with which events developed, and the effect of his many injuries, has made it impossible for him to recall many of the details surrounding the

accident. For these reasons, the Board has been unable to obtain from him the answers to many questions; e.g., whether or not the landing gear of the 202A was extended when Mr. Middlemass first saw the aircraft, altitude and separation estimates, Cessna 140 operational details, and why he was not using the radio. Mr. Middlemass had a certain amount of experience in operating the radio in his aircraft, and had it been turned on and tuned to tower frequency, it is possible that he would have been apprised of other traffic through the various tower transmissions.

However, the pilot of the Cessna 140 would not have been placed in this traffic situation had the airport traffic controller taken more positive action in carrying out his responsibility for the issuance of clearance and information to the various aircraft for the purpose of avoiding collision. The resultant hazardous condition was the underlying factor in causing Mr. Middlemass to climb his aircraft at too steep an angle. In addition to assuming what the TWA flight might do, he failed to advise the Cessna 170 and Cessna 195 of this essential traffic and cleared them for takeoff, nor did he hold the Cessna 140 until he was positive that the Martin presented no collision hazard. The Board is cognizant of the fact that the controllers must exercise considerable initiative in control of air traffic; their training, however, stresses that they are to know at all times the position of aircraft in the vicinity and have a clear understanding as to what the pilot wishes to do. It is understandable that Mr. Herman expected the 202A to make the same pattern it had made in the first simulated ILS approach. His subsequent transmission, based on this belief, in effect constituted approval to enter the traffic pattern for landing on Runway 31. On the other hand, the pilots of the TWA aircraft should have notified the tower well before reaching the middle marker that they did not intend to land and desired permission to make a pass over the field. Thus the controller would have been fully cognizant of the traffic situation. By making the low pass without authorization, the TWA pilots violated good flying practice and contributed materially to the hazardous situation. The Board does not wish to infer that it considers Mr. Herman alone to be at fault. There was considerable opportunity for TWA Flight 211 to notify the tower of modified intentions.

The Board once again desires to emphasize that it is the direct responsibility of any pilot, regardless of clearance issued by a tower, to be vigilant in looking for other aircraft and to fly in such a manner as not to create a hazard to others in the area. All too often, it appears that pilots become complacent about other traffic after receiving a clearance, particularly in an airport control zone.

With regard to the matter of vigilance, it appears that the occupants of the 202A and Cessna 195 could certainly have seen one another while the 195 was still in takeoff position, had the pilots of the two aircraft been sufficiently alert to the possibility of other traffic directly ahead.

By letter to the CAA dated August 1, 1952, Mr. Middlemass voluntarily surrendered his student pilot certificate and CAA airman identification card issued on December 6, 1951. The CAA, in a letter of reprimand dated August 19, 1952, cited violations of Civil Air Regulations, Sections 43.52 and 43.55. CAR 43.52 prohibits student pilots from piloting an aircraft carrying a passenger who does not possess at least a private pilot certificate. Mr. Pierson was not a pilot. CAR 43.55 prohibits a student pilot from piloting any aircraft other

than that of the category, class, and type which has been endorsed on the student pilot certificate by a flight instructor. His student pilot certificate did not carry the proper endorsement for operation of Cessna 140 aircraft. The CAA further advised that in view of the voluntary submission of the above documents, no further action would be taken but that the violations were being made a matter of record.

On June 2, 1952, the CAA Fifth Regional Office at Kansas City, Missouri, published a Division Circular[4] which, as one official testified, reiterated the need for tower personnel to be particularly vigilant in handling simulated instrument approaches. The Circular pointed out that if the pilot does not advise the controller of the type of simulated approach he plans to execute, the controller is to ascertain the type of approach and intended flight path prior to the time the aircraft begins approach from initial approach altitude using any of the several standard approach procedures.

Additionally, the Circular contained the following: Controllers were further instructed to issue a specific clearance for each simulated instrument approach prior to the time the aircraft reaches a position which might be in conflict with other aircraft in the vicinity of the airport, whether or not airborne. Essential traffic information is to be given to aircraft concerned to insure safety and facilitate handling of traffic by the controller. Should traffic conditions not permit the completion of the approach, the controller should issue appropriate instructions to abandon the approach or take other necessary action. Phraseologies utilized by controllers shall conform to prior instructions and the word "practice" should precede the type of approach approved, as: "Cleared to practice ILS approach." Pilots are to be requested to make certain position reports, as required, in order that the controller might know the approaching aircraft's position relative to other traffic. Coordination shall be effected between air carrier and airport traffic control personnel in order that misunderstandings shall not exist as to the purpose of training flights and radio procedures which will be employed by the pilots and the controllers.

This information was supplemented by a circular letter dated June 11, 1952, to all CAA Regional Administrators, emanating from the office of the Chief, Airways Operations Division, CAA, Washington, D. C.[5] This letter contained essentially the same information as that promulgated by the Fifth Region, and in addition pointed out that it is imperative that controllers maintain observation of an aircraft during a simulated instrument approach to insure that the pilot conforms to the clearance issued and to avoid conflict with other air traffic.

Following this accident, TWA issued instructions on June 3, 1952, that all pilots are to keep tower operators fully informed of their plans and anticipated maneuvers during training flights in the vicinity of an airport. Standard low-approach procedures are to be used at all times, unless variance might be indicated for reasons of wind and airport traffic, or other factors.

4/ Division Circular 545/ANC/51, Subject: Handling of Practice Instrument Approaches by Towers/TOWACS.

5/ Circular Letter W-380-153, Subject: Simulated Instrument Approaches.

Findings

On the basis of all available evidence, the Board finds that:

1. The pilot of the Cessna 140 was a properly certificated student pilot; however, he was operating N 72505 without proper endorsement on his pilot certificate in violation of Civil Air Regulations.

2. Passenger Pierson was carried in violation of Civil Air Regulations.

3. The Cessna 140, N 72505, was properly certificated and in an airworthy condition prior to the accident.

4. The pilot of N 72505 took evasive action to avoid, in his judgment, collision with another aircraft.

5. The Cessna 140 was climbed at too steep an angle at low speed, which resulted in a stall.

6. The pilots of the TWA aircraft failed to (1) advise the tower of their modified intentions to proceed across the airport, and (2) request clearance to proceed across the airport.

7. The airport traffic controller failed to exercise preventive action to obviate a collision hazard.

Probable Cause

The Civil Aeronautics Board determines that the probable cause of this accident was the action of the Cessna 140 pilot in climbing the aircraft too steeply at low air speed, resulting in a stall from which recovery was not effected.

BY THE CIVIL AERONAUTICS BOARD:

/s/ OSWALD RYAN

/s/ JOSH LEE

/s/ JOSEPH P. ADAMS

/s/ CHAN GURNEY

SUPPLEMENTAL DATA

Investigation and Hearing

The Civil Aeronautics Board was notified of this accident by telephone call from CAA Communications at Kansas City, Missouri, at 1815, May 12, 1952. An investigation was immediately initiated in accordance with the provisions of Section 702 (a)(2) of the Civil Aeronautics Act of 1938, as amended. A public hearing was ordered by the Board, and was held in the U. S. Post Office Building, Fifth Street and Kansas Avenue, Topeka, Kansas, on June 10 and 11, 1952.

Cessna 140 Occupants

Mr. John C. Middlemass, age 28, possessed Student Pilot Certificate No. SC 21254, issued by CAA Aviation Safety Agent David C. Detamore on July 8, 1951. Mr. Middlemass successfully completed a 3rd class CAA physical examination on July 2, 1951, given by Dr. George R. Maser. His total flight time as a pilot and student under instruction was approximately 90 hours.

Mr. Robert E. Pierson possessed no CAA airman certificate, and was not a pilot.

The Aircraft

N 72505 was a currently certificated Cessna 140, Serial No. 9675, manufactured in August 1946. The current CAA certificate of registration, issued on February 6, 1952, reflected the owner as Minter Construction Company, Mission, Kansas, in which Mr. Middlemass had a business interest. All CAA Airworthiness Directives applicable to N 72505 had been complied with at the time of the last annual inspection on July 19, 1951. The aircraft was equipped with a McCauley propeller, Model CM-7148 and a Continental C85-12F engine.

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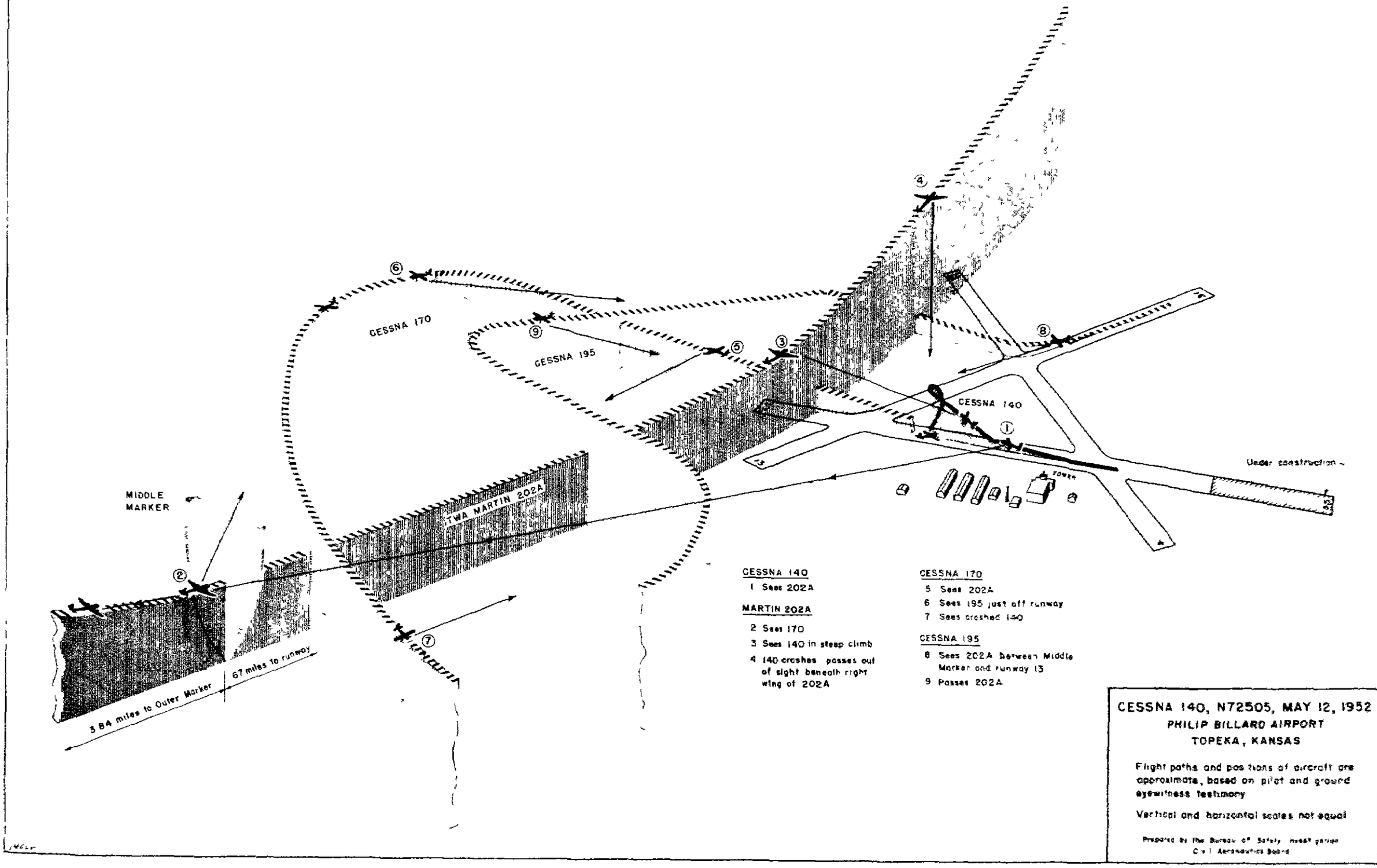

CESSNA 140
1 Sees 202A

MARTIN 202A
2 Sees 170
3 Sees 140 in steep climb
4 140 crashes passes out of sight beneath right wing of 202A

CESSNA 170
5 Sees 202A
6 Sees 195 just off runway
7 Sees crashed 140

CESSNA 195
8 Sees 202A between Middle Marker and runway 13
9 Passes 202A

CESSNA 140, N72505, MAY 12, 1952
PHILIP BILLARD AIRPORT
TOPEKA, KANSAS

Flight paths and positions of aircraft are approximate, based on pilot and ground eyewitness testimony

Vertical and horizontal scales not equal

Prepared by the Bureau of Safety, Investigation
Civil Aeronautics Board