# Aviation Investigation Final Report

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| **Location:** | Kansas City, Missouri | **Accident Number:** | CHI05LA160 |
| **Date & Time:** | June 30, 2005, 05:30 Local | **Registration:** | N21835 |
| **Aircraft:** | Piper PA-32RT-300 | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | | **Injuries:** | 1 Minor |
| **Flight Conducted Under:** | Part 135: Air taxi & commuter - Non-scheduled | | |

## Analysis

The airplane, on a non-scheduled domestic cargo flight, was destroyed on impact with a fence and levee on takeoff from runway 21. The pilot stated, "About 10 seconds after liftoff, aircraft started to descend. Impacted levee at end of runway, skidded over and came to rest on other side." The pilot reported that there were no mechanical malfunctions with the airplane. The air traffic controller on duty said that the winds were 310 degrees at 06 knots and further stated, "I observed [aircraft] backtaxi to [taxiway] Golf intersection of runway 21, turn around, and start departure roll. [Aircraft] was observed rotating abeam the highspeed taxiway." The pilot had private pilot privileges for single-engine land airplanes. The pilot took and passed an FAA Airman Competency/Proficiency Check in the same make and model single-engine airplane about two months prior to the accident. The pilot was found satisfactory in the examined flight maneuvers during that check ride. The airplane accumulated 0.1 hour since the 100-hour inspection. The pilot reported the weight of the cargo to be about 350 pounds and his calculated takeoff weight to be about 2,974 pounds. The cargo was removed from the wreckage and the cargo weighed 608 pounds. The post-accident calculated weight for the flight was 3,575 pounds. The airplane had a maximum gross weight of 3,600 pounds. The calculated takeoff ground roll distance for the flight was 2,200 feet and the calculated takeoff distance over a 50 foot obstacle was 4,000 feet. The runway distance available at intersection Golf on runway 21 was about 4,350 feet. Railroad, levee, and displaced thresholds are listed in the remarks for runway 3/21. Using the air traffic controller's reported winds, the calculated tailwind on runway 21 was one knot. The calculated headwind for runway 3 was one knot. Examination of the wreckage did not reveal any pre-impact anomalies.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot not maintaining climb airspeed leading to the airplane's impact with the fence and terrain during takeoff. Factors in the accident were the pilot's inaccurate preflight planning calculations, the fence, and the levee.

## Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: TAKEOFF

Findings
1. (F) OBJECT - FENCE
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
3. LACK OF CERTIFICATION - PILOT IN COMMAND
4. ALL AVAILABLE RUNWAY - NOT USED - PILOT IN COMMAND
5. (F) PREFLIGHT PLANNING/PREPARATION - INACCURATE - PILOT IN COMMAND
6. ABORTED TAKEOFF - NOT PERFORMED - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: TAKEOFF

Findings
7. TERRAIN CONDITION - GROUND
8. (F) TERRAIN CONDITION - DIRT BANK/RISING EMBANKMENT

## Factual Information

HISTORY OF FLIGHT

On June 30, 2005, about 0530 central daylight time, a Piper PA-32RT-300, N21835, operated by Safewing Aviation Company Inc., was destroyed on impact with a fence and levee on takeoff from runway 21 at the Charles B. Wheeler Downtown Airport (MKC), near Kansas City, Missouri. The non-scheduled domestic cargo flight was operating under 14 Code of Federal Regulations Part 135. Visual meteorological conditions prevailed at the time of the accident. The pilot sustained minor injuries and was hospitalized. An instrument flight rules flight plan was on file and was activated. The flight was originating at the time of the accident and was destined for the Wichita Mid-Continent Airport (ICT), near Wichita, Kansas.

The pilot's accident report stated:

> MKC to ICT call sign SFF [Safewing] 725. [Weather] brief by Columbia [Flight Service Station] at about 04:30. Departed MKC, [runway] 21 [at] 05:30. About 10 seconds after liftoff, aircraft started to descend. Impacted levee at end of runway, skidded over and came to rest on other side.

The pilot reported that there were no mechanical malfunctions with the airplane in reference to the accident flight.

The air traffic controller on duty stated:

> Backtaxi [runway] 21, when you are ready, proceed on course, cleared for takeoff, wind 310 [degrees at] 06 [knots]. I observed [aircraft] backtaxi to [taxiway] Golf intersection of runway 21, turn around, and start departure roll. [Aircraft] was observed rotating abeam the highspeed taxiway.

PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, the pilot held an airline transport pilot certificate with an airplane multiengine land rating with private pilot privileges for airplane single-engine land. The pilot's last medical examination was completed on April 15, 2005, when he was issued a second-class medical certificate with limitations for glasses. The pilot

took a FAA Airman Competency/Proficiency Check in the PA-32 type airplane on April 23, 2005. The pilot was found satisfactory in the examined flight maneuvers during that check ride.

The pilot reported that he had accumulated 12,420.5 hours of total time and that he had accumulated 243.9 hours of flight time in the same make and model as the accident airplane. He reported that he had a total time of 1,051.6 hours of total time in single engine airplanes.

## AIRCRAFT INFORMATION

N21835, was a Piper PA-32RT-300, Lance II, serial number 32-7885262, single-engine, low-wing airplane. Its engine was a 300-horsepower Lycoming IO-540-K1G5D, serial number L-16964-48A. It could accommodate up to six occupants and was reported to be configured for two occupants at the time of the accident. The airplane had a maximum gross weight of 3,600 pounds.

The pilot reported that a 100-hour inspection was completed on June 29, 2005 and that the airplane had accumulated 9,715 hours total time. He reported that the airplane accumulated 0.1 hour since the 100-hour inspection.

The pilot reported that the airplane was fueled with 94 gallons of 100 low lead aviation fuel prior to the accident flight.

The operator reported a calculated weight for the flight of 3,575 pounds.

## METEOROLOGICAL INFORMATION

At 0454, the recorded MKC weather was: Wind 350 degrees at 5 knots; visibility 7 statute miles; sky condition clear; temperature 27 degrees C; dew point 19 degrees C; altimeter 29.91 inches of mercury.

At 0554, the recorded KMKC weather was: Wind 040 degrees at 9 knots; visibility 8 statute miles; sky condition few 10,000 feet; temperature 25 degrees C; dew point 19 degrees C; altimeter 29.95 inches of mercury.

The air traffic controller reported the winds as 310 degrees at 6 knots at the time he issued the flight's takeoff clearance.

## AIRPORT INFORMATION

The North Central US Region Airport/Facility Directory (A/FD) indicated the field elevation at MKC was 801 feet. MKC is a towered airport with two runways, 1/19 and 3/21. The A/FD stated that runway 1/19 was 7,002 feet long and 150 feet wide. The A/FD stated that runway 3/21 was 5,050 feet long and 150 feet wide. Both runways' surface were composed of grooved asphalt. Runway 1/19 was closed for construction at the time of the accident. Railroad, levee, and displaced thresholds are listed in the remarks for runway 3/21. The runway distance available at intersection Golf on runway 21 is about 4,350 feet.

## WRECKAGE AND IMPACT INFORMATION

An airport fence, about 405 feet from the departure end of runway 21, exhibited impact marks. The levee, about 130 feet from the impacted fence, exhibited a ground scar. The top of the levee was about 155 feet from the impacted fence. The cargo was removed from the wreckage and weighed. The cargo weighed 608 pounds.

FAA inspectors examined the wreckage. Their examination did not reveal any pre-impact anomalies.

## ADDITIONAL INFORMATION

The FAA was a party to the investigation.

The pilot reported that the weight of the cargo to be about 350 pounds and the calculated takeoff weight to be about 2,974 pounds.

According to FAA inspector's calculations, the takeoff ground roll distance for the flight was 2,200 feet and the calculated takeoff distance over a 50 foot obstacle was 4,000 feet.

Using the air traffic controller's reported winds, the calculated tailwind on runway 21 was one knot. The calculated headwind for runway 3 was one knot.

## Pilot Information

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| **Certificate:** | Airline transport | **Age:** | 59,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | April 1, 2005 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | April 1, 2005 |
| **Flight Time:** | 12421 hours (Total, all aircraft), 244 hours (Total, this make and model), 10109 hours (Pilot In Command, all aircraft), 244 hours (Last 90 days, all aircraft), 102 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

| | | | |
|---|---|---|---|
| **Aircraft Make:** | Piper | **Registration:** | N21835 |
| **Model/Series:** | PA-32RT-300 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 32-7885262 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | June 1, 2005 100 hour | **Certified Max Gross Wt.:** | 3600 lbs |
| **Time Since Last Inspection:** | 0.1 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 9715 Hrs at time of accident | **Engine Manufacturer:** | Lycoming |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | IO-540-K1G5D |
| **Registered Owner:** | SAFEWING AVIATION COMPANY INC | **Rated Power:** | 300 Horsepower |
| **Operator:** | SAFEWING AVIATION COMPANY INC | **Operating Certificate(s) Held:** | On-demand air taxi (135) |
| **Operator Does Business As:** | | **Operator Designator Code:** | DD5A |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Dawn |
| **Observation Facility, Elevation:** | MKC,759 ft msl | **Distance from Accident Site:** | 1 Nautical Miles |
| **Observation Time:** | 05:54 Local | **Direction from Accident Site:** | 30° |
| **Lowest Cloud Condition:** | Few / 10000 ft AGL | **Visibility** | 8 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 9 knots / 0 knots | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 40° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29.95 inches Hg | **Temperature/Dew Point:** | 25°C / 19°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Kansas City, MO (MKC ) | **Type of Flight Plan Filed:** | IFR |
| **Destination:** | WICHITA, KS (ICT ) | **Type of Clearance:** | IFR |
| **Departure Time:** | 05:30 Local | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | KANSAS CITY DOWNTOWN MKC | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 759 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 21 | **IFR Approach:** | None |
| **Runway Length/Width:** | 5050 ft / 150 ft | **VFR Approach/Landing:** | None |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Minor | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Minor | **Latitude, Longitude:** | 39.123332,-94.592781 |

## Administrative Information

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| **Investigator In Charge (IIC):** | Malinowski, Edward |
| **Additional Participating Persons:** | George D Jackson; Federal Aviation Administration; Kansas City, MO |
| **Original Publish Date:** | April 25, 2006 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=61843 |