Aviation Investigation Final Report

Location:	Atlanta, Georgia	**Accident Number:**	ERA21LA056
Date & Time:	November 25, 2020, 00:09 Local	**Registration:**	N8125U (A1); N777CM (A2)
Aircraft:	Cessna 172 (A1); Aero Commander 500 (A2)	**Aircraft Damage:**	Substantial (A1); Minor (A2)
Defining Event:	Collision during takeoff/land	**Injuries:**	1 None (A1); 1 None (A2)
Flight Conducted Under:	Part 91: General aviation - Personal (A1); Part 135: Air taxi & commuter - Non-scheduled (A2)		

Analysis

The private pilot of the Cessna was landing while the airline transport pilot of the Aero Commander was landing on the opposite runway during night visual meteorological conditions, after the airport control tower had closed. The Cessna pilot activated the runway approach lighting system and mistakenly believed that the green threshold lights indicated the direction for landing on the active runway. The pilot-controlled lighting system used a separate radio frequency from the common traffic advisory frequency (CTAF) at this airport. The Cessna pilot stated that he then "switched radio channels" and made "routine calls." The Aero Commander pilot made radio announcements on the CTAF during each leg of the traffic pattern, announcing his location and intentions.

Contrary to the Cessna pilot's belief that the green lights he observed indicated the active runway (and the one on which he intended to land), they denoted the location of the (displaced) runway threshold of the adjacent runway. During landing rollout, the right-wing tip of the Cessna contacted the underside of the right wing of the Aero Commander, which had landed on the opposite runway, resulting in substantial damage to the Cessna's right wing.

The Cessna pilot reported that he did not hear any radio transmission from other aircraft operating at the time, and the pilot of the Aero Commander did not hear any radio transmissions from the Cessna pilot. Audio recordings of the CTAF frequency captured the radio transmissions made by the Aero Commander pilot (and other traffic) but did not capture any transmissions from the Cessna pilot. It is therefore likely that the Cessna pilot kept his single communications radio tuned to the pilot-controlled lighting frequency rather than change it to the CTAF as indicated in the airport/facility directory, which resulted in his

communications not being heard by other pilots in the vicinity and his lack of awareness of the Aero Commander pilot's position.

Probable Cause and Findings

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

The Cessna pilot's failure to tune his radio to the common traffic advisory frequency, which resulted in a lack of awareness of the other aircraft operating at the airport. Contributing to the accident was the Cessna pilot's lack of understanding of the airport lighting system.

Findings

Personnel issues (A1)	Forgotten action/omission - Pilot
Environmental issues (A1)	VHF/HF radio - Compliance w/ procedure
Personnel issues (A1)	Aeronautical knowledge - Pilot
Personnel issues (A2)	Forgotten action/omission - Pilot of other aircraft
Environmental issues (A2)	VHF/HF radio - Compliance w/ procedure
Personnel issues (A2)	Aeronautical knowledge - Pilot of other aircraft

Factual Information

History of Flight

Landing-landing roll (A1)	Collision during takeoff/land (Defining event)
Landing-landing roll (A2)	Collision during takeoff/land

On November 25, 2020, at 0009 eastern standard time, a Cessna 172 N8125U, was substantially damaged when it collided with an Aero Commander 500, N777CM, during landing at Dekalb-Peachtree Airport (PDK), Atlanta, Georgia. There were no injuries. The Cessna was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight. The Aero Commander was operated as a Title 14 *Code of Federal Regulations* Part 135 flight.

According to the Cessna pilot, while en route to PDK, his home base, he deviated around fog, which delayed his arrival until after the control tower had closed. Upon arrival near PDK, he listened to the automatic terminal information service, and reported that he "wrote down the radio channels and headed in, thinking how much (he) hated being without air traffic control." As he neared the airport, he activated the pilot-controlled lighting, and the runway lights. He saw green lights at the approach end of what he believed to be runway 21R and stated that these lights indicated the direction he was supposed to land on the active runway (the lighting the Cessna pilot observed actually indicated the displaced threshold for runway 21L). He stated that he then "switched radio channels" and made "routine calls." He did not hear any radio transmissions of other traffic operating at or near PDK. He reported that he had his landing lights and navigation lights on while on approach.

During landing on runway 21L, about 200 ft past the runway numbers at an altitude of about 10-15 ft above the runway and at 65 knots, the Cessna pilot saw a "tiny white light approaching extremely fast." About 3 seconds later, he heard a "bang" and the airplane "pitched hard" to the right He maneuvered the airplane back to the runway centerline and landed. He stated that he exited the runway at taxiway F, did not make any further radio calls, and taxied to his parking spot. An airport security guard met him and informed him that he had collided with another airplane.

According to the Aero Commander pilot, he opted to land on runway 3R "because other aircraft were landing on 3R." He followed an emergency medical services (EMS) helicopter that was landing on runway 3R. He entered a right downwind traffic pattern leg and "made the appropriate CTAF [common traffic advisory frequency] calls" on frequency 120.9. He turned to a right base and entered a ½ mile final for runway 3R, announcing each leg on the CTAF frequency. He reported that he typically does not adjust the intensity of the runway lights when landing at PDK, and he noticed that the light intensity increased while on approach. After landing, he saw "some lights" and was initially unsure what they were. He subsequently "realized it was an oncoming aircraft landing on runway 21L." He reported that both airplanes

swerved, and the right wingtip of the Cessna contact the right outboard wing section of the Aero Commander.

A review of Federal Aviation Administration (FAA) automatic dependent surveillance-broadcast (ADS-B) tracking data (see figure 1) revealed that the Cessna approached the airport from the northeast and flew a straight-in approach to runway 21L.

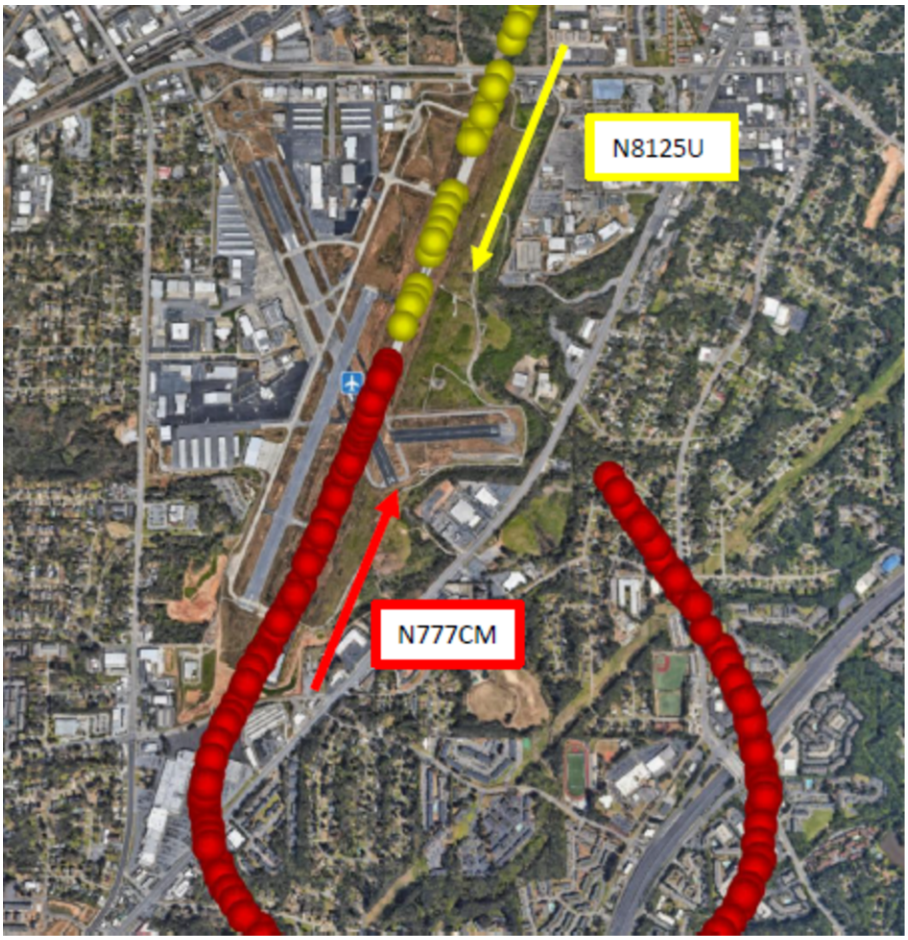

Figure 1 - ADS-B tracking data showing the ground track of the Cessna (yellow) and the Aero Commander (red).

A review of FAA recordings of the CTAF frequency 120.9 revealed that about 0005, the pilot of the Aero Commander initially announced that he was on a left downwind for runway 21L. About 2 minutes later, the pilot of an EMS helicopter, advised that he was on a modified base leg for runway 3R. The Aero Commander pilot then advised he was on final for runway 21L. The EMS pilot then advised that he had the Aero Commander in sight, acknowledged the potential conflict, and offered to approach the "shorter runway" (3L) instead. The Aero Commander pilot acknowledged and told the EMS pilot that he would instead go-around and enter a right downwind leg for runway 3R. The Aero Commander pilot subsequently transmitted his position as he entered the downwind leg and again as he made the turn to the final approach leg. Just after his turn to final, the EMS pilot announced that he was clear of the runway and hovering over the ramp. The Aero Commander pilot acknowledged and advised he had the helicopter in site.

FAA tracking data (see figure 1) showed that at the time the Aero Commander pilot advised that the had the helicopter in sight, the Cessna was on final, about ½ mile from the displaced threshold of runway 21L. The recording did not include any radio calls from the Cessna pilot.

Examination of both airplanes revealed that the Cessna sustained substantial damage to the right wingtip, including the outermost wing rib, and bending of the right aileron. Postaccident testing of all of the airplane's lights (with the exception of the right wingtip navigation light, which was separated from the wing) revealed no anomalies. Postaccident ground testing of the single communication radio revealed successful transmission and reception. Examination of the Aero Commander revealed minor scrapes/paint transfer to the underside of the right wing near the outboard edge of the wing flap, and minor damage to the right-wing flap.

According to the FAA airport/facility directory, the CTAF frequency at PDK is published as 120.9, which is the same frequency for the air traffic control tower when it is operating. When the tower is closed, the high intensity runway lights (along the runway edges) for runway 3R/21L are turned on and preset to medium intensity. The pilot-controlled lighting system uses a separate radio frequency, 120.0, which can be used to perform the following three functions: 1) increase the intensity of the runway edge lights, 2) activate the runway 21L approach lights (Medium Intensity Approach Lighting System with Sequenced Flashers or MALSF), which include green lights that mark the runway threshold, and 3) activate the taxiway lights. The green threshold lights, oriented transverse to the runway centerline, denote the location of the (displaced) runway threshold. These lights are not an indication of the "active runway" in use.

Pilot Information (A1)

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	BasicMed	**Last FAA Medical Exam:**	October 6, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 580 hours (Total, all aircraft)		

Pilot Information (A2)

Certificate:	Airline transport	**Age:**	67,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	July 23, 2020
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 30, 2020
Flight Time:	11500 hours (Total, all aircraft), 3500 hours (Total, this make and model), 150 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information (A1)

Aircraft Make:	Cessna	**Registration:**	N8125U
Model/Series:	172 F	**Aircraft Category:**	Airplane
Year of Manufacture:	1964	**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	17252025
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 1, 2020 Annual	**Certified Max Gross Wt.:**	2300 lbs
Time Since Last Inspection:	15 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6021 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:		**Engine Model/Series:**	O-300D
Registered Owner:	On file	**Rated Power:**	145 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Aircraft and Owner/Operator Information (A2)

Aircraft Make:	Aero Commander	**Registration:**	N777CM
Model/Series:	500 B	**Aircraft Category:**	Airplane
Year of Manufacture:	1964	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1412-147
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	September 18, 2020 AAIP	**Certified Max Gross Wt.:**	6750 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	24520 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, not activated	**Engine Model/Series:**	IO-540-E1A5
Registered Owner:	Central Airlines	**Rated Power:**	290 Horsepower
Operator:	Central Air Southwest	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	Central Air Southwest	**Operator Designator Code:**	ZJWA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	PDK,1002 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	23:53 Local	**Direction from Accident Site:**	179°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	90°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.26 inches Hg	**Temperature/Dew Point:**	8°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Savannah, GA (SAV) (A1); Birmingham, AL (BHM) (A2)	**Type of Flight Plan Filed:**	None (A1); IFR (A2)
Destination:	Atlanta, GA (A1); Atlanta, GA (A2)	**Type of Clearance:**	None (A1); None (A2)
Departure Time:	22:00 Local (A1); 06:00 UTC (A2)	**Type of Airspace:**	Class E (A1)

Airport Information

Airport:	Dekalb-Peachtree Airport PDK	**Runway Surface Type:**	Concrete
Airport Elevation:	998 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	21L	**IFR Approach:**	None
Runway Length/Width:	6001 ft / 100 ft	**VFR Approach/Landing:**	Straight-in

Wreckage and Impact Information (A1)

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	33.876002,-84.302031(est)

Wreckage and Impact Information (A2)

Crew Injuries:	1 None	**Aircraft Damage:**	Minor
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	33.876002,-84.302031(est)

Administrative Information

Investigator In Charge (IIC):	Brazy, Douglass
Additional Participating Persons:	Zach Andrade; FAA/FSDO; Atlanta, GA
Original Publish Date:	October 13, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=102341