Aviation Investigation Final Report

Location:	Oak Creek, Wisconsin	**Accident Number:**	CHI01FA218
Date & Time:	July 17, 2001, 22:40 Local	**Registration:**	N1448Z
Aircraft:	Cessna 310R	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The airplane was destroyed on impact with trees and terrain during an ILS approach. A post-impact on ground fire occurred. The air traffic controllers asked the pilot to keep the speed up on the approach. The reported weather was: Visibility 1/2 statute mile; present weather mist; sky condition broken 300 feet; temperature 21 degrees C; dew point 21 degrees C; altimeter 29.97 inches of mercury. The airplane impacted a wooded area west of the approach lights to the intended runway. Tree branches and a tree, along a linear path from the edge of this wooded area to where the airplane's fuselage came to rest, were found broken off and laying on the ground. The linear path was about 500 feet long. The fuselage came to rest about 400 feet south of College Avenue and about 1,800 feet from the approach end of the intended runway's centerline. The airplane's fuselage was found inverted, discolored, and deformed. Sections of the fuselage were found melted. The landing gear was found in the down position. No pre-impact anomalies were found. North of the wreckage site, across College Avenue, was a lighted aircraft ramp area. FAR 135.243 requires a pilot operating under IFR to have at least 1,200 hours of flight time. The operator reported that the pilot had 1,250 hours total time and that he had flown a total of 194 hours time in type in the last 90 days. The operator reported that the pilot flew 44.5 hours during instrument meteorological conditions and that he had flown 60 instrument approaches in the last 90 days.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot not maintaining clearance from objects during an ILS approach in low night IFR conditions and his descent below decision height. Factors were the dark night, mist, low ceiling, and the trees west of the approach.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
1. (F) OBJECT - TREE(S)
2. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
3. EXCESSIVE WORKLOAD (TASK OVERLOAD) - PILOT IN COMMAND
4. (F) LIGHT CONDITION - NIGHT
5. (C) DECISION HEIGHT - BELOW - PILOT IN COMMAND
6. VISUAL/AURAL PERCEPTION - PILOT IN COMMAND
7. (F) WEATHER CONDITION - DRIZZLE/MIST
8. (F) WEATHER CONDITION - LOW CEILING
9. AIRPORT FACILITIES,RAMP FACILITIES - OTHER

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
10. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On July 17, 2001, about 2240 central daylight time, a Cessna 310R, N1448Z, operated by Heartland Aviation, was destroyed on impact with trees and terrain in Oak Creek, Wisconsin, while on approach to runway 1L at General Mitchell International Airport (MKE), Milwaukee, Wisconsin. A post-impact ground fire occurred. A commercial pilot operating under 14 CFR Part 135 piloted the non-scheduled domestic cargo flight. Instrument meteorological conditions prevailed at the time of the accident and the flight was on an instrument flight plan. The pilot was fatally injured. The flight originated from Central Wisconsin Airport (CWA), near Mosinee, Wisconsin, at 2149 and was on the instrument landing system (ILS) 1L approach to MKE at the time of the accident.

The Federal Aviation Administration (FAA) supplied a tape recording and transcript of the MKE Air Traffic Control Tower (ATCT) radio transmissions. The first communication time listed below was 0326:08 Zulu, which was 2226:08 central daylight time. The MKE Approach Control was abbreviated as A/C, MKE Local Control was abbreviated as LC, Airborne Express flight 147 was abbreviated as ABX147, and the accident flight, call sign Night Chase 101, was abbreviated as NTC101 in the transcript. An excerpt from the transcript stated the following:

Time	Abbreviation	Communication
0326:08	A/C	night chase one o one ah fly heading of one seven zero I'll have lower for you in just a little bit
0326:14	NTC101	ok heading one seven zero for night chase one o one
0327:03	A/C	[controller's first name]
0327:04	LC	yes
0327:05	A/C	fifteen northwest night chase one o one wants to come lower is that ok
0327:08	LC	yea approved
0327:08	A/C	thanks
0327:09	LC	[controller's working initials]

0327:10 A/C night chase one o one descend and maintain two thousand six hundred feet

0327:13 NTC101 ok down to two thousand six hundred night chase one o one

0331:46 A/C night chase one o one fly heading one three zero

0331:50 NTC101 ok one three zero night chase one o one

0333:47 A/C night chase one o one fly heading one zero zero vector for the base

0333:50 NTC101 ok one zero zero night chase one o one

0334:31 A/C night chase one o one turn left heading zero three zero intercept the localizer

0334:34 NTC101 ok left zero three zero intercept the localizer for one o one

0334:42 A/C night chase one o one if you can keep the speed up i show you three miles from cappy you're cleared for the i l s one left approach

0334:48 NTC101 ok night chase one o one cleared for the i l s i'll keep the speed up if i can

0334:52 A/C thank you

0335:42 A/C night chase one o one tower one one niner point one

0335:44 NTC101 ok over to tower nineteen one good night

0335:50 NTC101 milwaukee tower (unintelligible) with you on the localizer for the i l s one left

0335:55 LC night chase one o one milwaukee runway one left cleared to land wind is calm keep

your speed up as much as feasible please

0336:00 NTC101 okay one o one i'll ah keep to the gear and cleared to land one left

0336:04 LC and where do you park

0336:11 LC night chase one o one where do you park tonight

0336:13 NTC101 ah one o one we'll be ah at signature

0336:17 LC all right thanks

0336:23 LC abex one forty seven taxi up to and hold short of one left there'll be ah three arrivals and we'll get you out

0336:29 ABX147 up to hold short of one left abex one forty seven

0339:32 LC night chase ah one o one exit at your first left turn and let me know where that'll be i don't see you

0339:45 LC night chase one o one milwaukee

0339:51 LC night chase one zero one milwaukee

0339:57 LC ah night chase one o one milwaukee are you on

0340:13 ABX147 tower abex ah one forty seven

0340:16 LC yes sir

0340:17 ABX147 yea we didn't see that guy land

0340:21 LC all right thanks ah i didn't either so i'm not sure where he is right now

0340:24 ABX147 now just out here to the right of the runway I did see a big ah red flash that lit up the whole sky I don't know if there's a factor or something but I saw

some big flames come up over there

0340:40 LC all right thank you

PERSONNEL INFORMATION

The pilot held commercial pilot and flight instructor certificates with airplane multiengine land, airplane single engine land, and instrument airplane ratings. The pilot held a FAA first-class aviation medical certificate issued on September 13, 2000, with no restrictions. The operator reported that the pilot had 1,250 hours total time and that he had flown a total of 194 hours time in type in the last 90 days. The operator reported that the pilot flew 44.5 hours during instrument meteorological conditions and that he had flown 60 instrument approaches in the last 90 days.

AIRCRAFT INFORMATION

The accident airplane, N1448Z, was a Cessna 310R, serial number 310R1527, twin-engine, low-wing airplane with retractable tricycle landing gear. The fuselage and empennage was of semimonocoque construction. The interior of the airplane was configured to carry cargo. Two, six-cylinder, fuel injected, Continental IO-550-A (2) engines powered the airplane. The engines were rated at 300 horsepower. The engine's propellers were McCauley three-bladed, constant speed, full feathering propellers. The airplanes last inspection was a progressive inspection completed on July 13, 2001. The airplane accumulated 11,220.7 hours of total time at that inspection.

METEOROLOGICAL INFORMATION

At 2203, the MKE weather was: Wind 090 degrees at 5 knots; visibility 1/2 statute mile; present weather mist; sky condition broken 300 feet; temperature 21 degrees C; dew point 21 degrees C; altimeter 29.97 inches of mercury.

AIDS TO NAVIGATION

The pilot was cleared for an ILS approach to runway 1L. The straight in decision height for that approach is 904 feet mean sea level (200 feet above ground level) and the required RVR [runway visual range] for a 14 CFR Part 135 flight to commence an approach is 1800 (3/8 mile). The ILS runway 1L approach had an approach lighting system with sequenced flashing lights. A copy of that approach procedure and the approach lighting system legend are included with the docket information associated with this factual report.

Following the accident, the ILS 1L was not used for approaches until the FAA's Airways and Facilities branch examined the approach. No anomalies were detected during the flight check of that approach.

AIRPORT INFORMATION

MKE had a field elevation of 723 feet. MKE had five runways. Runway 13/31 was concrete-surfaced, 5,868 feet long, and 150 feet wide. Runway 7R/25L was asphalt-surfaced, 8,012 feet long, and 150 feet wide. Runway 7L/25R was asphalt and concrete-surfaced, 4,800 feet long, and 100 feet wide. Runway 1R/19L was concrete-surfaced, 4,183 feet long, and 150 feet wide. Runway 1L/19R was asphalt and concrete-surfaced, 9,690 feet long, and 200 feet wide.

WRECKAGE AND IMPACT INFORMATION

An on-scene investigation was conducted. The airplane impacted a wooded area west of the approach lights to runway 1L. Tree branches and a tree, along a linear path from the edge of this wooded area to where the airplane's fuselage came to rest, were found broken off and laying on the ground. That linear path was about 500 feet long. The fuselage came to rest about 400 feet south of College Avenue and about 1,800 feet from the approach end of runway 1L's centerline at latitude 42 degrees 55.734' N and longitude 87 degrees 54.204' W. A post impact on ground fire occurred. The airplane's fuselage was found inverted, discolored, and deformed. Sections of the fuselage were found melted. The horizontal stabilizer and rudder were found detached from the fuselage. The landing gear was found in the down position. Wood fragments were found retained by the right tire's bead and rim. Both propellers were found detached from their engine flanges and the threaded bolt holes on the propeller hub assemblies were found oval shaped. The left engine produced a thumb compression on all cylinders except for the number six cylinder when the engine's crankshaft was rotated. That number six cylinder was found discolored and deformed. Valve train continuity was established to the number six cylinder. Both of the left engine's magnetos produced sparks when rotated by hand. The left engine's vacuum pump produced suction when rotated by hand. The right engine produced a thumb compression on all cylinders when the engine's crankshaft was rotated and one of its magnetos produced sparks. The right engine's vacuum pump was found with a broken base and coupler. That vacuum pump produced suction when the coupler was rotated by hand. Removed spark plugs exhibited a light gray color. Flight control cables were traced from the cockpit to the flight control surfaces and continuity was established. Engine control continuity was established. No pre-impact anomalies were found. See appended photographs.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Milwaukee County Medical Examiner's Office on

July 18, 2001.

The FAA Civil Aeromedical Institute prepared a Final Forensic Toxicology Accident Report. The report was negative for all tests performed.

ADDITIONAL INFORMATION

The parties to the investigation included the FAA, Cessna Aircraft Company, and Teledyne Continental Motors.

The aircraft wreckage was released to a representative of the MKE airport and retained items were released to a representative of the insurance company.

North of the wreckage site, across College Avenue, was a lighted aircraft ramp area.

An excerpt from Federal Aviation Regulation (FAR) 135.243, pilot in command qualifications, stated:

> (c) Except as provided in paragraph (a) of this section, no certificate holder may use a person, nor may any person serve, as pilot in command of an aircraft under IFR unless that person -
> (1) Holds at least a commercial pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating or that aircraft; and
> (2) Has had at least 1,200 hours of flight time as a pilot, including 500 hours of cross country flight time, 100 hours of night flight time, and 75 hours of actual or simulated instrument time at least 50 hours of which were in actual flight; ...

Subsequent to the accident, the operator instituted a high minimums requirement for their pilots-in-command of piston-powered aircraft in accordance with FAR 135.225 (d) requirements for turbine-powered pilots in command.

Pilot Information

Certificate:	Commercial	**Age:**	25,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):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	September 13, 2000
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 18, 2001
Flight Time:	1250 hours (Total, all aircraft), 194 hours (Total, this make and model), 194 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N1448Z
Model/Series:	310R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310R1527
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	July 13, 2001 Continuous airworthiness	**Certified Max Gross Wt.:**	5535 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	11220.7 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550-A (2)
Registered Owner:	HEARTLAND AVIATION	**Rated Power:**	300 Horsepower
Operator:	HEARTLAND AVIATION INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	AZNA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	MKE,723 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	22:03 Local	**Direction from Accident Site:**	190°
Lowest Cloud Condition:		**Visibility**	0.5 miles
Lowest Ceiling:	Broken / 300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	90°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	21°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	MOSINEE, WI (CWA)	**Type of Flight Plan Filed:**	IFR
Destination:	MILWAUKEE, WI (MKE)	**Type of Clearance:**	IFR
Departure Time:	21:49 Local	**Type of Airspace:**	Class C

Airport Information

Airport:	GENERAL MITCHELL INTERNATIONAL MKE	**Runway Surface Type:**	Asphalt;Concrete
Airport Elevation:	723 ft msl	**Runway Surface Condition:**	Wet
Runway Used:	1L	**IFR Approach:**	ILS
Runway Length/Width:	9690 ft / 200 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	42.947223,-87.896667

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	Robert K Gessert; Federal Aviation Administration; Milwaukee, WI Robert S Boyle; Teledyne Continental Motors; Arvada, CO Robert S August; Cessna Aircraft Company; Wichita, KS
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Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52746