

ASIAS BRIEF REPORT

GENERAL INFORMATION

Data Source: NTSB AVIATION ACCIDENT/INCIDENT DATABASE
Event Id: 20001211X13693
Local Date: 11/21/1993
Local Time: 1356
State: MA
City: NORTHAMPTON
Airport Name:
Event Type: ACCIDENT
Injury Severity: FATAL
Record Status:
Mid Air Collision: NO
Event Location: OFF AIRPORT/AIRSTRIP

WEATHER INFORMATION

Weather Briefing Complete: UNKNOWN
Brief Source:
Basic Weather Conditions: VISUAL METEOROLOGICAL COND
Light Condition: DAY
Cloud Condition: CLEAR
Cloud Height above Ground Level (ft): 0
Ceiling Height above Ground Level (ft): 0
Cloud Type: NONE
Visibility RVR (ft): 0
Visibility RVV (sm): 0
Visibility (sm): 20
Wind Direction (deg): 220
Wind Condition Flag: U
Wind Speed (knots): 14
Wind Condition Indicated: Unknown
Visibility Restrictions:
Precipitation Type:

AIRCRAFT INFORMATION

Aircraft 1

Category of Operation:	
Aircraft Type:	AIRPLANE
Aircraft Homebuilt:	NO
Aircraft Damage:	DESTROYED
Phase of Flight:	CRUISE
Aircraft Make:	PIPER
Aircraft Model:	PA-28
Aircraft Series:	PA-28-161
Operator Doing Business As:	RED HOOK AIR SERVICE
Operator Name	
Owner Name	DROBOT, GEORGE JR.
NTSB Report Number:	BFO94FA015
Number of Seats:	4
Number of Cabin Crew Seats:	
Number of Flight Crew Seats:	
Number of Passenger Seats:	
Number of Engines:	1
ELT Installed:	YES
ELT Operated:	YES
ELT Type:	
Aircraft Use:	PERSONAL
Type of Operation:	PART 91: GENERAL AVIATION
Departure Airport Id:	46N
Departure City:	RED HOOK
Departure State:	NEW YORK
Last Departure Point:	NO
Destination Local:	
Destination Airport Id:	BED
Destination City:	BEDFORD
Destination State:	MASSACHUSETTS
Runway Id:	0
Runway Length:	
Runway Width:	
Flight Plan Filed:	NONE
Domestic/International:	
Passenger/Cargo:	
Registration Number:	N3011F
Air Carrier Operating Certificates:	NO
Air Carrier Other Operating Certificates:	NO
Rotocraft/Agriculture Operating Certificate:	UNKNOWN
Cert Max Gross Wgt:	2325
Aircraft Fire:	NONE
Aircraft Explosion:	NONE

Landing Gear:
ATC Clearance
Landing Gear
Runway Condition
Landing Surface

ENGINE INFORMATION

Aircraft 1 - Engine #:1

Engine Type: RECIPROCATING
Engine Manufacturer LYCOMING
Engine Model O-320-D3G
Engine Horsepower 160
Engine Thrust HP
Carb/Injection CARBURETOR
Propeller Type

Injury Summary for Aircraft 1

	Fatal	Serious	Minor	None
Crew	1	0	0	0
Pass	3			
Total	4	0	0	0

Pilot-in-Command for Aircraft 1

Certificates: PRIVATE

Ratings:

Plane:

Non-Plane:

Instrument:

Instruction:

Crew Age: 49

Crew Sex: M

Crew Resident State:

Crew Resident Country:

Had Current BFR: Y

Months Since Last BFR:

Medical Certificate: CLASS 3

Medical Certificate Validity: VALID MEDICAL--W/ WAIVERS/LIM.

Flight Time (hours)

Total : 177

Make/Model : 177

Instrument : 0

Multi-Engine : 0

Last 24 Hours : 1

Last 30 Days : 1

Last 90 Days : 14

Rotocraft : 0

Sequence of Events

Aircraft 1

Occurrence #: 1

IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: CRUISE - NORMAL

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	1	LIGHT CONDITION	SUNGLARE		
2	2	IDENTIFICATION OF AIRCRAFT ON RADAR	NOT ATTAINED	ATC PERSONNEL (DEP/APCH)	CAUSE
3	2	TRAFFIC ADVISORY	NOT ISSUED	ATC PERSONNEL (DEP/APCH)	CAUSE
4	2	RADAR TRAFFIC INFORMATION SERVICE	NOT USED	PILOT IN COMMAND	
5	2	VISUAL LOOKOUT	INADEQUATE	PILOT OF OTHER AIRCRAFT	FACTOR
6	1	OBJECT	OTHER PERSON		

Occurrence #: 2

AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: CRUISE - NORMAL

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	1	VERTICAL STABILIZER SURFACE	FOREIGN OBJECT DAMAGE		
2	1	VERTICAL STABILIZER SURFACE	SEPARATION		

Occurrence #: 3

LOSS OF CONTROL - IN FLIGHT

Phase of Operation: CRUISE - NORMAL

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	2	AIRCRAFT CONTROL	NOT POSSIBLE	NO PERSON SPECIFIED	

Occurrence #: 4

IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
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AIRCRAFT 1 PRELIMINARY REPORT

HISTORY OF FLIGHT On November 21, 1993, about 1356 hours eastern standard time, a Piper PA-28-161, N3011F, collided with a free-falling parachutist while in cruise flight over the Northampton Airport, Northampton, Massachusetts. The airplane subsequently impacted terrain during an uncontrolled descent and was destroyed. The certificated private pilot and the three passengers were fatally injured, and the parachutist received serious injuries. The airplane was operated by Red Hook Air Service, Red Hook, New York. The personal flight originated in Red Hook and was destined for Bedford, Massachusetts. Visual meteorological conditions prevailed and a flight plan was not filed for the flight. According to the operator, the accident airplane departed the Red Hook Sky Park about 1300 hours for a round-trip, cross country flight. The purpose of the flight was to return the son of the pilot and the son's acquaintance to the Boston area after a weekend at the pilot's home in Rhinebeck, New York. An acquaintance of the pilot was also on board and intended to return to Rhinebeck with the pilot. No record of communications between the pilot of the accident airplane and any FAA facility were found. As the flight of the accident airplane proceeded eastbound in cruise flight toward Boston, another airplane, N50442, a Cessna 210, departed from the Northampton Airport. The airplane was a "jumper" airplane with five sport parachutists and the pilot on board. According to the operator of the jumper airplane, the purpose of the flight was to drop five parachutists in free fall over the Northampton Airport. Four of the five parachutist on board were to jump as two pairs of "tandem" jumpers. The solo jumper was not attached to anyone and was designated as the "spotter"; he was to guide the pilot over the jump zone and jump out of the airplane first. The flight was the fifth jumper flight of the day. According to FAA air traffic control (ATC) voice recordings, the pilot of the jumper airplane contacted Bradley Approach Control at 1347:21 hours immediately after departing from the Northampton Airport. The pilot reported that he was at 1,800 feet and climbing to 8,000 feet "... with jumpers." The controller, having already issued a discrete transponder code for the previous four jumper flights, provided a traffic advisory and requested that the jumper airplane "... report one minute prior ..." to releasing the jumpers. According to the jumper airplane pilot: I climbed and circled (to clear for traffic) for about eight minutes. My job is to put the jump plane over the 'spot'. It was pretty windy at altitude and I would estimate our ground speed to be about 45 knots when we turned onto the course for the jump run. I turned from 90 degrees onto the jump run as a final clearing turn. I did not see any other traffic. I contacted Bradley and gave them a 'one minute to jump' warning. The jumper airplane pilot also stated that he transmitted the same warning on the Northampton Airport common traffic advisory frequency (CTAF). According to ATC voice recordings, the jumper airplane pilot issued a "one minute prior" warning to Bradley Approach Control at 1355:32 hours. The controller then made the following transmission on the Approach Control frequency: "Attention all aircraft one minute to parachute jumping vicinity of Northampton Airport surface to eight thousand feet." No advisories were issued by the controller to the jumper airplane pilot concerning the accident airplane. Also, no communications were made by the accident airplane with either Bradley Approach Control or the Northampton CTAF. According to the solo parachutist on the jump airplane, he was the first to jump out of the jumper airplane. He stated that he received the "door open" sign from the pilot,

opened the door, and looked out to "fine tune" the pilot's course over the jump zone. He stated that he did not observe any other air traffic in the area as he was looking out the door. He then jumped out of the airplane. About five to six seconds later, he observed "... an airplane coming right at me. I was coming from above it - angling down towards it." He stated that he thought he would miss the airplane, but "... hit the tail ..." instead. He then deployed his parachute and floated toward the drop zone. He stated that as he was floating, he observed the accident airplane "... about 200 feet above the ground, going in totally out of control." A ground witness located at the Northampton Airport reported that as he was observing the jumper airplane, he noticed the accident airplane heading in the "... totally opposite direction ..." of the jump airplane. He observed the first parachutist jumping out of the jumper airplane and striking the rudder of the accident airplane. He observed "... a rudder piece fall off ..." and then saw sparks. He stated that it was "... only a few seconds from the time the jumper came out to the time he hit the Piper." The ground witness also stated: The Piper stayed level for a second or two [after it was hit], then it banked to the right, then to the left, then to the right again. It kept on spiralling down to the right in a really nose down attitude. It looked almost inverted as it got closer. The tailcone looked intact, but there was no rudder. There was no fire or smoke as it descended. I saw it until it disappeared behind trees. At 1356:43 hours, a sound similar to the tone of an emergency locator transmitter (ELT) was recorded on the ATC voice recording. At 1357:04 hours, the jumper airplane pilot transmitted "jumpers away" to Bradley Approach Control. At 1357:08 hours, Bradley Approach Control issued a traffic advisory to the jump airplane, stating that traffic was "one mile east of your position altitude indicating two thousand six hundred." At 1358:29 hours, the jumper airplane pilot issued a "MAYDAY" to Bradley Approach control and reported that he had just witnessed an airplane accident. The accident occurred during the hours of daylight at 42 degrees 19.34 minutes North, and 072 degrees 35.50 minutes West. PERSONNEL INFORMATION The pilot of the accident airplane, age 49, was issued a private pilot certificate with a rating for airplane single engine land on February 2, 1992. According to his personal flight logbook, he had accumulated a total of 177 hours of flight time, all in type. He received an FAA third class medical certificate on July 28, 1993. The pilot of the jumper airplane, age 28, was a certificated airplane transport pilot and certified flight instructor. He reported that he had logged over 3,000 hours of flight time. He was employed by the operator of the jumper airplane for six months preceding the accident. The solo parachutist who struck the tail of the accident airplane, age 51, held an "A" sport parachute rating. He stated that he had accumulated about 37 sport parachute jumps during the preceding two years. According to the FAA, the ATC specialist who was providing advisories to the jumper airplane was receiving on-the-job training at the time of the accident. A full performance ATC specialist was designated as his instructor at the time of the accident. METEOROLOGICAL CONDITIONS The reported surface weather observation at Bradley International Airport, located about 24 nautical miles south of the accident site, three minutes prior to the accident was: "sky clear, visibility 20 miles, temperature 46 degrees F, dewpoint 19 degrees F, wind 220 degrees at 14 knots, altimeter 30.23 inches Hg." At the time of the accident, the true bearing to the sun at 7,000 feet mean sea level (msl) was 214.9 degrees. The altitude of the sun was 21.3 degrees of declination. AIRPORT INFORMATION The Northampton Airport is uncontrolled and has a single paved runway. The field elevation is 122 feet msl. The CTAF that serves the airport is 122.7 Megahertz (Mhz). According to the FAA, the Northampton Airport parachute jumping area is described as a three nautical mile radius of the Barnes VORTAC 039 degree radial at 11 nautical miles, surface to 13,000 feet msl in Class E airspace. The published hours of operation of the jumping area were 0800 hours local until one hour after sunset. The Massachusetts Aeronautics Commission granted the airport an annual permit to operate as a Massachusetts Parachute Jump Center prior to the accident. The airport successfully passed an additional inspection by the Commission about one week after the accident. WRECKAGE AND IMPACT INFORMATION The airplane wreckage was examined at the accident site on November 21, 1993, and during the two days that followed. The examination of the wreckage revealed that portions of the airplane's rudder and the entire vertical stabilizer had separated in flight. Pieces of the top portion of the rudder, including the counterweight, beacon, and fairing, were found about 1/3 nautical miles from the main wreckage, and about 2/3 nautical miles from the Northampton Airport. The magnetic bearing from the separated pieces to the main wreckage site was 124 degrees. The entire vertical stabilizer was not recovered, despite numerous ground and air search efforts. The main wreckage was found in a wooded area adjacent to the Connecticut River. An examination of the site revealed no evidence of fire. A single branch from a tree located about 45 feet from the wreckage was found broken. No other tree branches displayed evidence of a fresh separation in the vicinity of the accident site. The right wing was found partially wrapped around the trunk of tree. The entire airplane was found resting upright within its own dimensions. Uniform crush damage was observed along its entire underside. The airplane was oriented on a magnetic bearing of about 135 degrees. An examination of the tail section revealed that the rudder remained loosely attached to the tailcone and was bent 90 degrees to the right at the base. The rudder was also wrinkled at its midspan. The front and rear attach points for the vertical stabilizer were sheered off about four inches from their base. The entire

vertical stabilizer had separated. The horizontal stabilizer and trim tab remained intact. An examination of the airframe and engine did not reveal any evidence of pre-impact mechanical deficiencies. A current New York Sectional Chart was found in the wreckage. MEDICAL AND PATHOLOGICAL INFORMATION An autopsy was performed on the pilot by Dr. Beauchamp, M.D., at the Commonwealth of Massachusetts Office of the Chief Medical Examiner, Springfield, Massachusetts, on November 22, 1993. The cause of death listed on the report of autopsy was "multiple trauma." No pre-existing conditions were noted on the report of autopsy. A toxicological examination was conducted on specimens from the pilot by the Armed Forces Institute of Pathology, Washington, D.C. On their report dated December 9, 1993, negative results were reported for ethanol. Positive results were reported for two screened antidepressant drugs; the report stated that the liver contained "2.1 mg/kg of doxepin" and "1.5 mg/kg of nordoxepin."

TESTS AND RESEARCH Two Bendix/King transceivers found in the wreckage were forwarded to a laboratory at the Allied Signal, Inc., General Aviation Avionics Division, in Olathe, Kansas. Both transceivers underwent laboratory testing on January 5, 1994, under the supervision of the Safety Board. A report of the testing is attached. The integrated circuits from both transceivers were removed and the stored radio frequencies were extracted from them. The "in use" frequency stored on one of the transceivers was 120.30 Mhz. This is the published frequency used by the Bradley International Airport Control Tower. (Warnings for parachute jump activity were given over the frequency for Bradley Approach Control.) The "in use" frequency from the second transceiver was 122.80 Mhz. This is the published frequency used as the CTAF at the Red Hook Sky Park. The published CTAF at the Northampton Airport is 122.7 Mhz.

ADDITIONAL INFORMATION Recorded Radar Data Study. A Recorded Radar Data Study was performed by the Safety Board's Office of Research and Engineering. A report of the study, which includes a plot of the flight paths of the jumper airplane and the accident airplane, is attached. According to the report: Inspection of the resultant flightpath plot revealed that at 1354:32 Local Time, N3011F [accident airplane] was determined to be travelling east at an recorded Mode C altitude of 5600' and 5700' MSL. At the same time, the parachute jump plane, N50442 was travelling westbound while climbing through 6500' MSL. BT target returns were recorded for N3011F through 1356:18.0 at a Mode C altitude of 5700', and then a final return at 1356:50.4 at 5000' MSL.

FAA Air Traffic Controllers Handbook. According to the FAA Air Traffic Controller's Handbook, FAAH 7110.65H, Section 9, Paragraph 9-93: Handle notification to conduct jump operation in other Class E airspace as follows: a. Issue a traffic advisory to the jump aircraft before the jump. Include aircraft type, altitude, and direction of flight of all known traffic which will transit the airspace within which the jump will be conducted.

FAA Air Traffic Controller Statements. The air traffic controller who was communicating with the accident airplane stated that he did not see a target transmitting a beacon code of 1200 in the vicinity of the jumper airplane about the time the pilot reported one minute prior to "jumpers away." He stated that because he did not see the target, he did not issue a traffic advisory to the pilot of the jumper airplane. The controller was receiving on-the-job training at the time of the accident. The full performance level controller who was training him provided a similar statement concerning the accident.

Information and Publications Depicting Parachute Jump Activity. According to the FAA, there was no Notice to Airmen (NOTAM) disseminated on the accident date because the parachute jump area is depicted on the New York Sectional Chart and activity items are published in the Airport/Facility Directory. The New York Sectional Chart contains a symbol shaped like a parachute located just above the Northampton airport symbol. The parachute symbol is about 1/8 inch in height and is blue in color. It is superimposed over the depiction of the Connecticut river, also blue in color. No other information concerning parachute jumping is contain on the New York Sectional Chart. Information concerning the parachute jumping area at the Northampton Airport is also published in the Airport/Facility Directory, page 320, effective November 11, 1993 through January 6, 1994, as provided to the National Flight Data Center on August 3, 1987. The sentence "Parachute Jumping" is the complete amount of verbiage concerning sport parachute jumping at the Northampton Airport under the "AIRPORT REMARKS" section.

Release of Airplane Wreckage. The airplane wreckage was released to Mr. John Dean, Vice President, Phoenix Aviation Managers, Inc., Andover, New Jersey, representing the owner, on May 11, 1994.

AIRCRAFT 1 FINAL REPORT

A PIPER PA-28, N3011F, WAS IN VFR CRUISE FLIGHT HEADING EASTBOUND AT ABOUT 5700' MSL, AS A CESSNA 210 (PARACHUTE JUMP PLANE) HAD JUST COMPLETED A CLEARING TURN TO A WESTBOUND HEADING, INTO THE SUN, AT 7300' MSL. A PARACHUTIST JUMPED FROM THE JUMP PLANE & STRUCK THE VERTICAL STABILIZER OF THE PA-28 AFTER A FEW SECONDS OF FREE FALL. CONTROL OF THE PA-28 WAS LOST, & IT CRASHED IN AN UNCONTROLLED DESCENT. THE JUMP PLANE WAS IN RADAR & RADIO COMMUNICATION WITH AIR TRAFFIC CONTROL (ATC) IN ORDER TO

RECEIVE TRAFFIC ADVISORIES PER THE FAA ATC CONTROLLER'S HANDBOOK. THE PA-28 WAS RECORDED ON RADAR. NO ADVISORIES WERE ISSUED TO THE JUMP PLANE AFTER THE PILOT CALLED '1 MINUTE PRIOR TO JUMP.' TESTS SHOWED THAT ONE TRANSCEIVER IN THE PA-28 WAS TUNED TO 120.30 MHZ; A WARNING FOR PARACHUTE JUMPING WAS GIVEN OVER THIS FREQUENCY. A 1/8' PARACHUTE SYMBOL (COLORED BLUE) WAS DEPICTED ON THE SECTIONAL CHART AND WAS SUPERIMPOSED OVER A RIVER (ALSO COLORED BLUE). THE CONTROLLER WAS RECEIVING ON-THE-JOB TRAINING FROM A FULL PERFORMANCE CONTROLLER.

AIRCRAFT 1 CAUSE REPORT

FAILURE OF THE AIR TRAFFIC CONTROL (ATC) FACILITY TO IDENTIFY AND PROVIDE THE REQUIRED TRAFFIC INFORMATION TO THE JUMP AIRCRAFT BEFORE RELEASE OF THE JUMPER(S). A FACTOR RELATED TO THE ACCIDENT WAS: INADEQUATE VISUAL LOOKOUT BY THE PILOT OF THE JUMP AIRCRAFT.

END REPORT

ASIAS BRIEF REPORT

GENERAL INFORMATION

Data Source: NTSB AVIATION ACCIDENT/INCIDENT DATABASE
Event Id: 20021002X05256
Local Date: 09/29/2002
Local Time: 1600
State: RI
City: PAWTUCKET
Airport Name: NORTH CENTRAL STATE
Event Type: ACCIDENT
Injury Severity: SERIOUS
Record Status:
Mid Air Collision: NO
Event Location: ON AIRPORT/AIRSTRIP

WEATHER INFORMATION

Weather Briefing Complete: NOT PERTINENT
Brief Source:
Basic Weather Conditions: VISUAL METEOROLOGICAL COND
Light Condition: DAY
Cloud Condition: CLEAR
Cloud Height above Ground Level (ft):
Ceiling Height above Ground Level (ft):
Cloud Type: NONE
Visibility RVR (ft):

Visibility RVV (sm):
Visibility (sm): 10
Wind Direction (deg):
Wind Condition Flag: V
Wind Speed (knots):
Wind Condition Indicated: Calm
Visibility Restrictions:
Precipitation Type:

AIRCRAFT INFORMATION

Aircraft 1

Category of Operation:
Aircraft Type: AIRPLANE
Aircraft Homebuilt: NO
Aircraft Damage: NONE
Phase of Flight: STANDING - ENGINE(S) OPERATING
Aircraft Make: CESSNA
Aircraft Model: CE-208
Aircraft Series: CE-208-B
Operator Doing Business As:
Operator Name: BOSTON-PROVIDENCE SKYDIVING CENTER
Owner Name: KEVIN MCCOLE
NTSB Report Number: NYC02LA199
Number of Seats: 2
Number of Cabin Crew Seats:
Number of Flight Crew Seats:
Number of Passenger Seats:
Number of Engines: 1
ELT Installed: YES
ELT Operated: NO
ELT Type:
Aircraft Use: OTHER WORK USE
Type of Operation: PART 91: GENERAL AVIATION
Departure Airport Id: SFZ
Departure City: PAWTUCKET
Departure State: RHODE ISLAND
Last Departure Point: YES
Destination Local: DEST & DEPARTURE SAME, ACCIDENT CAN OCCUR ANYWHERE
Destination Airport Id: SFZ
Destination City:
Destination State:

Runway Id:
 Runway Length:
 Runway Width:
 Flight Plan Filed: NONE
 Domestic/International:
 Passenger/Cargo:
 Registration Number: N9347B
 Air Carrier Operating Certificates: NO
 Air Carrier Other Operating Certificates: UNKNOWN
 Rotocraft/Agriculture Operating Certificate:
 Cert Max Gross Wgt: 8750
 Aircraft Fire: NONE
 Aircraft Explosion: NONE
 Landing Gear: RETR
 ATC Clearance
 Landing Gear
 Runway Condition
 Landing Surface

ENGINE INFORMATION

Aircraft 1 - Engine #:1

Engine Type: TURBO PROP
 Engine Manufacturer: PRATT & WHITNEY
 Engine Model: PT-6A-114A
 Engine Horsepower: 675
 Engine Thrust: HP
 Carb/Injection
 Propeller Type: CONTROLLABLE PITCH

Injury Summary for Aircraft 1

	Fatal	Serious	Minor	None
Crew	0	0	0	1
Pass				
Total	0	0	0	1

Pilot-in-Command for Aircraft 1

Certificates: FLIGHT INSTRUCTOR,AIRLINE TRANSPORT

Ratings:

Plane:

Non-Plane:

Instrument:

Instruction:

Crew Age: 44

Crew Sex: M

Crew Resident State:

Crew Resident Country:

Had Current BFR:

Months Since Last BFR: 01-MAR-02

Medical Certificate: CLASS 1

Medical Certificate Validity: VALID MEDICAL--NO WAIVERS/LIM.

Flight Time (hours)

Total : 4900

Make/Model : 700

Instrument : 3000

Multi-Engine : 1600

Last 24 Hours : 5

Last 30 Days : 75

Last 90 Days : 200

Rotocraft : 20

Sequence of Events

Aircraft 1

Occurrence #: 1

PROPELLER/ROTOR CONTACT TO PERSON

Phase of Operation: STANDING - ENGINE(S) OPERATING

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	2	PROPER TOUCHDOWN POINT	NOT OBTAINED	OTHER PERSON	CAUSE

AIRCRAFT 1 PRELIMINARY REPORT

On September 29, 2002, about 1600 eastern daylight time, a Cessna 208B, N9347B, was not damaged while stopped on the ramp at the North Central State Airport (SFZ), Pawtucket, Rhode Island, when a parachutist contacted the propeller. The certificated airline transport pilot was not injured; however, the parachutist sustained serious injuries. Visual meteorological conditions prevailed and no flight plan had been filed for the parachuting flight conducted under

14 CFR Part 91. During an interview, the pilot said he landed after conducting his tenth parachute drop flight of the day, and while taxiing back to the ramp, he stopped to ensure that all the parachutists had landed. The pilot did not observe any further canopies, and taxied back to the ramp. The airplane was parked on the ramp, with the engine running, while the next group of parachutists were boarding the airplane. The pilot then heard screams and observed a canopy enter the propeller. The pilot immediately shut down the engine. Witnesses reported observing the parachutist descending toward the airplane without altering her course. One witness reported he "tackled" the parachutist to the ground; however, the parachute became entangled in the airplane's propeller and subsequently dragged the parachutist into the propeller. The parachutist had completed an estimated 18 prior jumps, which included 4 jumps at SFZ. The pilot estimated that the normal parachutist landing zone was between 50 to 300 feet from the ramp area. Winds reported at the airport, about the time of the accident were calm.

AIRCRAFT 1 FINAL REPORT

After a parachute drop flight, the airplane taxied back to the ramp area. The airplane was parked on the ramp, with the engine running, while the next group of parachutists were boarding the airplane. During that time, a parachutist who had just landed, contacted the propeller and sustained a serious injury. Witnesses reported observing the parachutist descending toward the airplane without altering her course. One witness reported he "tackled" the parachutist to the ground; however, the parachute became entangled in the airplane's propeller and subsequently dragged the parachutist into the propeller. The parachutist had completed an estimated 18 prior jumps, which included 4 jumps at the accident airport. Winds reported at the airport, about the time of the accident were calm.

AIRCRAFT 1 CAUSE REPORT

The parachutist's failure to obtain the proper touchdown point, which resulted in contact with the operating propeller of a parked airplane.

END REPORT

ASIAS BRIEF REPORT

GENERAL INFORMATION

Data Source:	NTSB AVIATION ACCIDENT/INCIDENT DATABASE
Event Id:	20001211X12786
Local Date:	07/24/1993
Local Time:	1300
State:	NH
City:	LEBANON
Airport Name:	
Event Type:	ACCIDENT
Injury Severity:	FATAL
Record Status:	
Mid Air Collision:	NO
Event Location:	OFF AIRPORT/AIRSTRIP

WEATHER INFORMATION

Weather Briefing Complete:	UNKNOWN
Brief Source:	
Basic Weather Conditions:	VISUAL METEOROLOGICAL COND
Light Condition:	DAY
Cloud Condition:	UNKNOWN
Cloud Height above Ground Level (ft):	6000
Ceiling Height above Ground Level (ft):	6000
Cloud Type:	BROKEN
Visibility RVR (ft):	0
Visibility RVV (sm):	0
Visibility (sm):	25
Wind Direction (deg):	330
Wind Condition Flag:	U
Wind Speed (knots):	6
Wind Condition Indicated:	Unknown
Visibility Restrictions:	
Precipitation Type:	

AIRCRAFT INFORMATION

Aircraft 1

Category of Operation:	
Aircraft Type:	AIRPLANE
Aircraft Homebuilt:	YES
Aircraft Damage:	DESTROYED
Phase of Flight:	MANEUVERING
Aircraft Make:	
Aircraft Model:	
Aircraft Series:	
Operator Doing Business As:	
Operator Name:	
Owner Name:	MCGRATH, MARY J.
NTSB Report Number:	BFO93FA135
Number of Seats:	2
Number of Cabin Crew Seats:	
Number of Flight Crew Seats:	
Number of Passenger Seats:	
Number of Engines:	1
ELT Installed:	YES
ELT Operated:	NO
ELT Type:	
Aircraft Use:	UNKNOWN

Type of Operation:	PART 91: GENERAL AVIATION
Departure Airport Id:	LEB
Departure City:	
Departure State:	
Last Departure Point:	YES
Destination Local:	DEST & DEPARTURE SAME, ACCIDENT CAN OCCUR ANYWHERE
Destination Airport Id:	LEB
Destination City:	
Destination State:	
Runway Id:	0
Runway Length:	
Runway Width:	
Flight Plan Filed:	NONE
Domestic/International:	
Passenger/Cargo:	
Registration Number:	N90BC
Air Carrier Operating Certificates:	NO
Air Carrier Other Operating Certificates:	NO
Rotocraft/Agriculture Operating Certificate:	UNKNOWN
Cert Max Gross Wgt:	
Aircraft Fire:	NONE
Aircraft Explosion:	NONE
Landing Gear:	
ATC Clearance	
Landing Gear	
Runway Condition	
Landing Surface	

ENGINE INFORMATION

Aircraft 1 - Engine #:1

Engine Type:	RECIPROCATING
Engine Manufacturer	LYCOMING
Engine Model	AEIO-360-A1D
Engine Horsepower	200
Engine Thrust	HP
Carb/Injection	FUEL INJECTED
Propeller Type	

Injury Summary for Aircraft 1

	Fatal	Serious	Minor	None
Crew	1	0	0	0
Pass				
Total	1	0	0	0

Pilot-in-Command for Aircraft 1

Certificates: COMMERCIAL

Ratings:

Plane:

Non-Plane:

Instrument:

Instruction:

Crew Age: 45

Crew Sex: F

Crew Resident State:

Crew Resident Country:

Had Current BFR: Y

Months Since Last BFR:

Medical Certificate: CLASS 2

Medical Certificate Validity: VALID MEDICAL--NO WAIVERS/LIM.

Flight Time (hours)

Total : 2392

Make/Model : 663

Instrument : 678

Multi-Engine : 147

Last 24 Hours : 2

Last 30 Days : 28

Last 90 Days : 56

Rotocraft : 0

Sequence of Events

Aircraft 1

Occurrence #: 1

IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: MANEUVERING

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	1	OBJECT	OTHER PERSON		

2	2	CREW/GROUP COORDINATION	INADEQUATE	NO PERSON SPECIFIED	CAUSE
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Occurrence #: 2

IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
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AIRCRAFT 1 PRELIMINARY REPORT

HISTORY OF FLIGHT On Saturday, July 24, 1993, at 1300 eastern daylight time, a Christen Eagle II, N90BC, owned, operated, and piloted by Mary J. McGrath of Colchester, Vermont, collided with a parachutist during the opening act of an airshow over the Lebanon Airport in Lebanon, New Hampshire. The pilot and parachutist were fatally injured. The airplane was destroyed. Visual meteorological conditions prevailed at the time of the accident. The flight was conducted under 14 CFR Part 91. The airshow was operating under an aviation event waiver issued by the Federal Aviation Administration (FAA). On July 25, 1993, two jumpers from the airshow's opening act were interviewed. The jumpers stated that their planned opening routine consisted of three jumpers deploying from the jump airplane at 3,500 feet above ground level (agl). Two jumpers would join together at 2,000 feet agl and display the American Flag, while a third jumper circled above. One of the jumpers stated that the act was planned in advance and there were no last minute additions to the act. During an interview after the accident, the pilot of the Pitts S 2S, N31485, who also participated in the opening act, stated that he and the pilot of N90BC (the accident airplane) discussed the opening act routine after the required preshow briefing. He stated that they both agreed they would take off after the jump airplane and fly to the right of the jump airplane prior to the start of the opening act. The pilot of N31485 also stated that he said to the pilot of N90BC that she should "...fly in a line abreast position on my right wing at a comfortable distance..." while observing the jumpers deploy, maintaining both visual contact and separation from the jumpers. The pilot of N31485 stated that during the opening routine, he was to remain in close proximity to the jumpers while the pilot of N90BC would fly the right wing position until breaking formation to circle the jumpers. Once the two jumpers were joined up after deploying from the jump airplane, the two biplanes would then break away from each other and turn on their smoke machines. N90BC was to circle the jumpers in a clockwise direction outside the track of N31485, while N31485 circled the jumpers in a counter clockwise direction. The two biplanes would continue to fly opposing, descending spirals around the jumpers until the end of the act. The pilot of N31485 stated that during their private discussion after the preshow briefing, he and the pilot of N90BC reviewed emergency procedures and alternate plans in the event that something went wrong during the set up for the opening act. He stated that if one airplane was not in proper position at the beginning of the act, the procedure was for the out of position airplane to depart the area until the completion of the act. He also stated that during their discussion, he did not reference a specific number of jumpers that were to be involved in the opening act and only used the word "stack" as a reference to the jump team. The pilot of N31485 stated that after the airplanes were airborne and about four minutes prior to the jumpers deploying from the airplane, N90BC passed his airplane and the jump airplane and then turned right, away from both the airplanes. The pilot of N31485 stated that as N90BC passed both airplanes, the pilot of N90BC made a comment over the radio. The Lebanon Air Traffic Control tower tape revealed, at 1655:39, the pilot of N90BC stated over the radio, "It would have been nice if I had (unintelligible) this." (See attached tower tape transcript.) During an interview with the jump airplane's pilot, he stated that he too saw N90BC pass N31485 and his airplane and then turn right. Both the jump airplane pilot and the pilot of N31485 stated that they assumed the pilot of N90BC turned the airplane right to circle back to get in the "briefed" position, which was "...abreast and to the right..." of the Pitts. The jump airplane pilot stated that he did not see N90BC again. The pilot of N31485 said he looked over his right shoulder and saw N90BC flying in the opposite direction and did not regain visual contact with N90BC for the duration of the act. According to the tower tape, at 1700:14, about four minutes and 35 seconds after N90BC

turned away from the other airplanes, the pilot of the jump airplane stated over the tower frequency, "Tower tower jumpers are about fifteen seconds away fifteen seconds." At 1700:29, the pilot of N90BC stated over the tower frequency, "Don you call it when I break right okay." At 1700:39, the jump airplane pilot announced, "Jumpers are away jumpers are away." At 1700:42, the pilot of N31485 stated, "Okay Mary you can break right." For the duration of the act, no other transmissions were made from the act participants, except for one transmission made at 1701:28, by the pilot of N31485, who queried the position of N90BC. The pilot of N31485 stated that as soon as he saw the two jumpers deploy from the airplane, he initiated a left banking turn into a spiral. He said he continued to fly the predetermined maneuvers but did not release smoke from his airplane, as briefed, because he did not know the location of N90BC. A photograph taken seconds after the first two jumpers were deployed from the jump airplane revealed N90BC was to the right and behind N31485 at an undetermined distance. The pilot of the jump airplane stated that the first two jumpers departed the airplane and the third jumper did not immediately follow the other two jumpers. He stated the third jumper was standing in the door ready to jump when the jumper leaned backward and hesitated. The pilot stated that he thought that was "strange" so he looked over his shoulder to the jump door. The pilot stated that he saw the red Pitts (N31485) under the jump airplane prior to the deployment of the third jumper. He stated that when N31485 was clear of the jump airplane, the third jumper jumped. Two videos of the airshow taken during the time of the accident were compiled and reviewed. One video tape began with two jumpers deployed from the jump airplane and N31485 banked in a left counter clockwise turn on the left side of the jump airplane. N90BC was behind and to the right of both the jump airplane and the two deployed jumpers at an undetermined distance. N90BC appeared to be flying outside the same path as N31485 and was turning left in a counter clockwise direction. The jump airplane's track continued to move in a straight line. As time progresses, the straight track of the jump airplane and the counter clockwise turn of N90BC, placed N90BC inside and to the left of the jump airplane's position where N90BC collided with the third jumper. During the collision, the video shows the third jumper with his parachute deployed but not open. After the collision, the second video showed N90BC in an uncontrolled descent towards the ground with smoke trailing the airplane. Spectators at the airshow reported seeing N90BC falling to the ground about one mile west of the airport near the Mascoma River. The video also showed the third jumper floating towards the ground with his reserve parachute deployed. The third jumper landed inside the airshow's "show line" boundary. PERSONNEL

INFORMATION The pilot of N90BC received her renewal of Statement of Acrobatic Competency from the FAA on June 25, 1993. According to FAA records, FAA Forms 8710.7, Application for Statement of Acrobatic Competency, the pilot had flown in 19 air shows since July 8, 1990. The last airshow the pilot participated in was held in Burlington, Vermont, on September 20, 1992. The commercial pilot's log book showed that she had a total of 2,254 flight hours. Two of the three jumpers were licensed through the United States Parachute Association (USPA). The parachutist that was fatally injured did not have a license, nor was it a requirement under 14 CFR Part 105, at the time of the accident.

WRECKAGE AND IMPACT INFORMATION The airplane wreckage was examined at the accident site on July 25, 1993. The examination of the wreckage revealed that the airplane came to rest together except for the left wing.

Portions of the left wing were found scattered around the airport and near the accident site. Review of the video tapes revealed debris falling to the ground after the airplane collided with the jumper. The airplane came to rest in a wooded area about one mile west of the airport. The engine was embedded in the ground about three feet below the ground's surface with the airplane wreckage resting on top. The accident occurred during daylight hours. MEDICAL AND

PATHOLOGICAL INFORMATION The autopsy of the pilot was performed by Dr. Roger Fossum, Chief Medical Examiner, at the Office of the Chief Medical Examiner in Concord, New Hampshire, on July 25, 1993. The autopsy revealed no evidence of physical incapacitation or impairment. However, according to the autopsy report issued by Dr. Roger Fossum, who also performed the autopsy on the parachutist, evidence indicated that the parachutist impacted the pilot and "...undoubtedly caused disabling if not lethal injuries to the pilot...." The toxicology tests for the pilot were performed by Dr. Dennis V. Canfield at the Civil Aeromedical Institute located in Oklahoma City, Oklahoma.

Negative results were reported for carbon monoxide and cyanide. Positive results were reported for drugs and volatiles. During a telephone conversation, Dr. Roger Fossum stated that the drugs and volatiles identified "...were most likely from putrefaction." The autopsy of the parachutist revealed no evidence of physical incapacitation or impairment. The toxicology tests for the parachutist were performed by Dr. Dennis V. Canfield at the Civil Aeromedical Institute located in Oklahoma City, Oklahoma. Negative test results were reported for all screened drugs and volatiles.

ADDITIONAL INFORMATION Advisory circular (AC) 91 45C, Waivers: Aviation Events, provides prospective aviation event sponsors and other interested parties with information necessary to assist in planning and conducting a safe aviation event. It also provides information on the application process for a Certificate of Waiver or Authorization. Waivers are issued based on the FAA policy that anytime the agency determines a proposed event will be in the public interest in terms of safety and environmental concerns, a waiver will be issued predicated on specific requirements of

the event. An airshow is considered an aviation event and therefore must operate under a Certificate of Waiver or Authorization. It is mandated by AC 91 45C, that a preshow briefing take place. Section 2, Part 25, Preshow Activity, States, "...For performing teams, it is permissible for just the team leader or other performing member to attend in lieu of every member. The team leader or other performing member must then assume the responsibility for briefing each of the other members of the team." An attachment to the Certificate of Waiver, issued to the Lebanon Riverside Rotary Club, Mr. James E. Parker, Lebanon Municipal Airport, Lebanon, NH, applicable July 23 through 25, 1993, identified as "Special Provisions" for the New England Region Aviation Events/Airshows states under item number 5, "...No person may participate in any event unless they have received a briefing on the provisions of the waiver. Prior to beginning activities, the holder shall obtain a statement signed by all participants, stating that they have read, understood and will comply with the conditions of the Certificate of Waiver." Of the three members of the jump team participating in the opening act, one signed the waiver. Further, in a letter from the Portland, Maine, Flight Standards District office, dated July 9, 1993, written to the Director of the Lebanon Airshow, it states, "All participants of the airshow shall be in attendance at this briefing." After the accident, FAA personnel who approved and granted the Certificate of Waiver for the Lebanon airshow stated that regardless of how the "Special Provisions" and the statement in the letter were interpreted, it was acceptable to allow one member to represent a team at the required preshow briefing. FAA personnel also stated it was acceptable to allow one team member to represent the team by signing the waiver. According to the airshow director, during the required preshow briefing, the opening act was briefed by the jump team leader. Members of the opening act present at the preshow briefing were two of the three jumpers and the pilots of N90BC and N31485. The pilot of the jump airplane was late to the briefing and was not present for the entire opening act briefing. During a telephone interview after the accident, the jump team leader stated that he did not remember specifying how many jumpers were to deploy from the airplane and that during the briefing, he used the word "jumpers" to describe the team. The third jumper (subsequent fatality) was not present at the preshow briefing and had no previous airshow jump experience. Numerous people who attended the preshow briefing were interviewed after the accident. (See attached Record of Interviews.) Most of the participants interviewed could not remember specifics about the opening act briefing. However, some thought a third jumper was mentioned, but stated the emphasis of the act was put on the two jumpers that were to join up with each other. One participant at the preshow briefing stated that he specifically heard that there were three jumpers mentioned for the opening act because he remembered wondering about the identity of the third jumper. Two people interviewed stated that they heard during the briefing for the opening act that "...two jumpers were going to jump out with a flag and a third jumper was to circle above with smoke." Some of the people interviewed stated that they could not be sure about the number of jumpers mentioned for a particular act because there were two acts involving parachutists that were briefed at the preshow briefing. The pilot of N31485 stated that he only expected two jumpers to deploy from the airplane and he executed a left counter clockwise turn after the second jumper had cleared the jump airplane. He stated that after the accident, he reviewed his notes that he took during the preshow briefing. He said that his notes showed "...2 to join, 3500 2000(smoke)." After the accident, the members of the jump team and the pilot of N31485 stated that they had performed this act together on previous occasions, with the pilot of N90BC, in prior air shows. They stated that occasionally, the opening act would use only two jumpers while other times there were three jumpers. According to the director of the Lebanon air show, the same persons, excluding the third jumper, performed the very same act three previous times: July 3, 1992, at the Sugarbush Airshow and twice in Augusta, Maine, in July, 1992. The airplane wreckage was released to Debbie-Jo Kothe-Tennis, Vice President of American Claim Service, Inc., of Memphis, Tennessee, on July 30, 1993.

AIRCRAFT 1 FINAL REPORT

OPENING ACT WAS FOR 3 JUMPERS TO EXIT FROM JUMP-PLANE (J/P) AT 3500' AGL; 2 JUMPERS WERE TO JOIN AT 2000' TO DISPLAY FLAG, WHILE 3RD JUMPER WAS TO CIRCLE ABOVE. N90BC & N31485 WERE TO CIRCLE JUMPERS IN OPPOSITE DIRECTIONS. N90BC WAS TO CIRCLE CLOCKWISE, OUTSIDE TURN RADIUS OF N31485, WHICH WOULD CIRCLE COUNTERCLOCKWISE. WHEN 2 OF 3 JUMPERS EXITED FROM J/A, PILOT OF N31485 BANKED LEFT INTO SPIRAL, APPARENTLY UNAWARE OF 3RD JUMPER. 3RD JUMPER DELAYED UNTIL N31485 WAS CLEAR, THEN JUMPED AS J/A CONTINUED ON SAME HEADING. PHOTO SHOWED N90BC WAS TO THE RIGHT & AT AN UNDETERMINED DISTANCE BEHIND N31485 AS 1ST 2 JUMPERS EXITED. AFTER 3RD JUMPER EXITED, HE & N90BC COLLIDED. N90BC WAS DAMAGED, WENT OUT OF CONTROL & CRASHED. AFTER ACCIDENT, SOME PARTICIPANTS OF PRESHOW BRIEFING DID NOT RECALL A 3RD JUMPER BEING MENTIONED, ALTHOUGH OTHERS REMEMBERED. 3RD JUMPER WAS NOT PRESENT FOR PRESHOW BRIEFING, BUT

AC 91-45C ALLOWED FOR ONLY 1 MEMBER FROM EACH TEAM TO ATTEND PRESHOW BRIEFING,
THEN BRIEF OTHER TEAM MEMBERS.

AIRCRAFT 1 CAUSE REPORT

INADEQUATE CREW/GROUP COORDINATION.

END REPORT

ASIAS BRIEF REPORT

GENERAL INFORMATION

Data Source: NTSB AVIATION ACCIDENT/INCIDENT DATABASE
Event Id: 20050502X00529
Local Date: 04/23/2005
Local Time: 915
State: FL
City: DELAND
Airport Name: DELAND MUNI-SIDNEY H TAYLOR FIELD
Event Type: ACCIDENT
Injury Severity: FATAL
Record Status:
Mid Air Collision: NO
Event Location: ON AIRPORT/AIRSTRIP

WEATHER INFORMATION

Weather Briefing Complete:
Brief Source:
Basic Weather Conditions: VISUAL METEOROLOGICAL COND
Light Condition: DAY
Cloud Condition: SCATTERED
Cloud Height above Ground Level (ft): 12000
Ceiling Height above Ground Level (ft):
Cloud Type: NONE
Visibility RVR (ft):
Visibility RVV (sm):
Visibility (sm): 10
Wind Direction (deg): 210
Wind Condition Flag: Y
Wind Speed (knots): 10
Wind Condition Indicated:

Visibility Restrictions:

Precipitation Type:

AIRCRAFT INFORMATION

Aircraft 1

Category of Operation:

Aircraft Type: AIRPLANE

Aircraft Homebuilt: NO

Aircraft Damage: SUBSTANTIAL

Phase of Flight: APPROACH - VFR PATTERN - DOWNWIND

Aircraft Make: DE HAVILLAND-BOMBARDIER

Aircraft Model: DHC-6 TWIN OTTER

Aircraft Series:

Operator Doing Business As:

Operator Name

Owner Name VERTICAL AIR INC.

NTSB Report Number: MIA05LA096

Number of Seats: 2

Number of Cabin Crew Seats:

Number of Flight Crew Seats:

Number of Passenger Seats:

Number of Engines: 2

ELT Installed: YES

ELT Operated: NO

ELT Type:

Aircraft Use: SKYDIVING

Type of Operation: PART 91: GENERAL AVIATION

Departure Airport Id: DED

Departure City: DELAND

Departure State: FLORIDA

Last Departure Point: YES

Destination Local: CRASH AT DESTINATION CITY

Destination Airport Id: DED

Destination City: DELAND

Destination State: FLORIDA

Runway Id: NA

Runway Length:

Runway Width:

Flight Plan Filed: COMPANY VFR

Domestic/International:

Passenger/Cargo:

Registration Number: N24HV

Air Carrier Operating Certificates: NO
Air Carrier Other Operating Certificates: UNKNOWN
Rotocraft/Agriculture Operating Certificate:
Cert Max Gross Wgt: 12500
Aircraft Fire: NONE
Aircraft Explosion: NONE
Landing Gear: FIXD
ATC Clearance
Landing Gear
Runway Condition
Landing Surface

ENGINE INFORMATION

Aircraft 1 - Engine #:1

Engine Type: TURBO PROP
Engine Manufacturer PRATT & WHITNEY CANADA
Engine Model PT6A-27
Engine Horsepower 620
Engine Thrust HP
Carb/Injection
Propeller Type

Injury Summary for Aircraft 1

	Fatal	Serious	Minor	None
Crew	0	0	0	1
Pass				
Total	0	0	0	1

Pilot-in-Command for Aircraft 1

Certificates: COMMERCIAL

Ratings:

Plane:

Non-Plane:

Instrument:

Instruction:

Crew Age: 56

Crew Sex: M
 Crew Resident State:
 Crew Resident Country:
 Had Current BFR:
 Months Since Last BFR: 01-MAR-05
 Medical Certificate: CLASS 2
 Medical Certificate Validity: WITH WAIVERS/LIMITATIONS

Flight Time (hours)
 Total : 12384
 Make/Model : 4014
 Instrument : 0
 Multi-Engine : 9000
 Last 24 Hours : 2
 Last 30 Days : 74
 Last 90 Days : 193
 Rotocraft : 0

Sequence of Events

Aircraft 1

Occurrence #: 1

IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: APPROACH - VFR PATTERN - DOWNWIND

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	2	VISUAL LOOKOUT	INADEQUATE	PILOT IN COMMAND	CAUSE
2	1	OBJECT	OTHER PERSON		

AIRCRAFT 1 PRELIMINARY REPORT

History of the Flight On April 23, 2005, about 0915 eastern daylight time, a de Havilland DHC-6, N24HV, registered to Vertical Air Inc. and operated by Skydive Deland, Inc., as a Title 14 CFR Part 91 parachute operation, collided with a cinematographer parachutist during the downwind leg for landing on runway 23 at the Deland Municipal-Sidney H Taylor Field Airport, Deland, Florida. Visual meteorological conditions prevailed and the flight was coordinated with the FAA Daytona Beach Approach Control. The commercial-rated pilot reported no injuries and the cinematographer parachutist received fatal injuries. The airplane incurred substantial damage to the left wing. The flight originated from Deland Municipal Airport, earlier that day, about 0855 EDT. The pilot stated that after the 14 jumpers left the airplane, at 13,500 feet msl, southwest of the airport; he started his descent to the northeast. He approached the airport from the northeast and at 6,000 feet msl, he communicated through Deland's Unicom frequency to report his intentions to other airplane traffic. He entered the traffic pattern at pattern altitude and airspeed. He saw some parachutes on the ground and some in the air. He saw a tandem jumper toward the southwest and believed he had accounted for all jumpers. He over flew the airport and made a left turn to enter the downwind leg for runway 23. He elect runway 23 due to the city's noise abatement restrictions in the area south of the airport. As he turned left, he saw a flash of colors, felt an impact and drag from the left wing. He got the airplane on the ground as soon as possible. According to one ground witnesses, the parachutist was descending and was about 600 feet above ground level (agl) when the left wing of the

airplane collided with him. Another witness heard an unusual muffled sound and saw the airplane flying at an altitude of 1,070 feet agl. The witness indicated the parachutist's canopy deflated during impact and the airplane was heading in a south-southeast direction. He then saw the canopy re-inflate and the parachutist make a controlled descent between the hangars and runway before landing. After the collision the airplane continued downwind and landed on runway 23 without further incidents. A section of the airplane's left wing front top spar cap and spar web, outboard of the lift strut attaching point, incurred substantial damage. One of the master tandem jumpers on the jump stated that the winds favored the landing zone area next to the left side of runway 30, about 1,000 feet from the approach end of runway 30. The pilot of the airplane did not give a briefing on which runway or approach he was going to execute. The norm is for the jumpers to avoid crossing runways below 1,000 feet and to stay away about 300 feet from the runways, and the pilot to avoid jumpers at all times. Due to the amount of jumps that are performed per day there is no briefing before each flight on what approach pilots will use to land at the airport. It all depends on the individual pilot on how quick they return to the airport and how tight of a downwind, base and final approach is executed. Radar data provided by the FAA Jacksonville Air Route Traffic Control Center was reviewed by the NTSB Operational Factors Division, Washington, DC. The review indicated that the accident airplane was about 1,300 feet means sea level (msl) when it was approaching runway 5/23 from the northwest. The airplane flew over runway 23, near mid field, about 1,100 feet msl and was between 900 to 800 feet msl during the left turn entering the downwind for runway 23. The radar data continued capturing the airplane as it approached runway 23 with an attitude of 300 feet msl before the last radar contact. The published traffic pattern attitude for the airport is 1,000 agl for propeller airplanes. Video equipment that was carried by the cinematographer was retained by NTSB and sent to the NTSB Vehicle Recorders Division, Washington, DC, for analysis. The video captured several minutes before and after the collision. The video begins with a view of inside the cabin during the climb. All of the skydivers, including the three tandem pairs, jump from the airplane. The cinematographer skydiver jumps with the last tandem at 2 minutes and 18 seconds into the recording. The tandem chute deploys at 3 minutes and 7 seconds followed by the cinematographer skydiver's chute deploying 13 seconds later. A sound similar to an altitude alerter is heard at approximately 3 minutes and 34 seconds into the recording. As the cinematographer skydiver descends, he removes the helmet-mounted camera and looks into the view making a few remarks about the jump. He places the camera back to its original position and continues to capture audio and video. The sky is overcast above them and visibility is good. The view pans to the right and captures three skydivers with chutes deployed at an altitude above him. At approximately 4 minutes and 54 seconds, a sound similar to an airplane engine can be heard at an increasing level for 5 seconds. At 4 minutes and 59 seconds, the view pans slightly left and a sound similar to an impact is heard. The view becomes blurry and pans rapidly. At 5 minutes and 2 seconds, three frames capture what appears to be an aircraft in close proximity banking away and to the right of the camera's view. The view continues to pan rapidly for about 6 seconds showing shots of the ground, sky, and parachute. The camera stabilizes and records until impact with the ground at 5 minutes and 46 seconds. The recording skips to another group preparing to jump inside the airplane after the ground impact. The following groups occurred before the accident in time but appear after the accident on tape. Medical and Pathological information Thomas R. Beaver, M.D., Chief Medical Examiner of Volusia and Seminole Counties Medical Examiner's Office performed postmortem examinations of the cinematographer parachutist. The cause of death was complications of blunt force trauma to the extremities and neck. Test and Research The pilot stated during an interview with NTSB that he has been flying jumps since 1966 and has made over 2,000 drops. He as been with Skydive Deland since 1998 and was hired due to his experience in skydiving and is a skydiver himself. He is one of the six pilots that fly jump airplanes for Skydive Deland. The pilots for the jump airplane are independent contractor and are compensated by the number of individual jumpers that are released per airplane. The pilot of the jump airplane looks out for other airplanes and is vigilant in see and avoid. The skydivers look out for other skydivers, the speed of parachutes, vertical movements, and horizontal separation. One rule is for the skydivers not to cross runways during their descent near the airport. The jumps are conducted from assigned altitudes of 5,000 feet, 10,500 feet, or 13,500 feet. It takes about the 6 minutes to get from jump release altitude of 13,500 feet to the ground. There is no briefing with the jumpers before the flight with respect to which runway is going to be use and what type of approach will be executed. The pilots are aware of the landing zones on the airport. There are no standard operating procedures for return descents away from the runways. After the drops, the descent is done to the east or northeast to keep away from the airways, inside Daytona's airspace and to the south, there is Daytona's localizer. The procedures that he followed are in the FAA Advisory Circular 90.66A and what the city of Deland put out for noise abatement procedures. A representative of the aircraft operator was asked by NTSB what is the protocol to enter the traffic pattern per Skydive Deland? He stated that verbal guidance is given to them (pilots) to follow the FAA rules and it up to their discretion. There are no written protocols. The only thing is the noise abatement procedures. Additionally, the NTSB requested a list of the pilots that fly the

jump flights for Skydive Deland. The operator did not provide a list of pilots that are authorized to conduct jump flight for them. The acting airport manager stated that there is no "Letter of Agreement" for airport operations between Skydive Deland and the City of Deland, only the lease for the property agreement. The City Commission for Deland conducted a study on noise abatement for the airport and approved a voluntary noise abatement procedure. The procedure outlines traffic patterns, limits to altitudes, and areas to avoid for noise abatement. It denotes to avoid noise sensitive areas south of the airport. Several residences of the Deland airport provided to the NTSB correspondences between themselves and the City of Deland regarding concerns with safety issues at the Deland airport. The majority of the concerns were the operational practices of Skydive Deland, particularly the approaches and landings at the airport. FAA Advisory Circular 90.66A, Recommended Standard Traffic Pattern and Practices for Aeronautical Operation at the Airports without Operating Control Towers, which the Deland airport is, outlines for parachute operations; "Pilots and parachutist should both be aware of the limited flight performance of the parachutes and take steps to avoid any potential conflicts between aircraft and parachute operations." The United States Parachute Association, Skydiving Aircraft Operation Manual, suggest that diligence should be exercised in watching for other air traffic. Turns during descent should be kept to a minimum. A Letter of Agreement between Skydive Deland, FAA Daytona Beach Approach, and FAA Jacksonville Air Route Traffic Control Center, defines skydiving procedures and is supplemental to the Title 14 CFR Part 105. The Letter of Agreement defines the boundary of the jump zone and aircraft operating procedures. The jump zone below 4,000 feet Mean Sea Level (MSL) is the airspace within 1.5 nautical miles from the center of Deland airport. Above 4,000 feet MSL the jump zone is the airspace with 2.0 nautical miles from the airport center. Additional Information The aircraft wreckage was released by NTSB to the registered aircraft owner on April 25, 2005. The cinematograph equipment retained by NTSB for further examination was returned to the Deland Police Department on October 7, 2005.

AIRCRAFT 1 FINAL REPORT

The pilot stated that after the 14 jumpers left the airplane at 13,500 feet, southwest of the airport, he started his descent to the northeast. He approached the airport from the northeast overflew the airport, and made a left turn to enter the downwind leg for runway 23. He saw some parachutes on the ground and some in the air. He saw a tandem jumper toward the southwest and believed he had accounted for all jumpers. As he turned left, he saw a flash of colors, felt an impact and drag from the left wing. He got the airplane on the ground as soon as possible. Radar data indicated that the airplane was about 1,300 feet msl when it was approaching runway 5/23 from the northeast. The airplane flew over runway 23, near mid field, about 1,100 feet msl and was between 900 to 800 feet msl during the left bank entering the downwind for runway 23; last capture was at 300 feet as it approached runway 23. One jumper stated the parachute landing zone was located on the airport adjacent to the left side of runway 30. The video equipment that was carried by the cinematographer captured the collision. The cinematographer jumps with the last tandem jumpers. The tandem chute deploys at 3 minutes and 7 seconds into the video, 13 seconds later the cinematographer's chute deploys. During his descent, he removes the helmet-mounted camera and looks into the view making a few remarks about the jump. He places the camera back to its original position and continues to capture; the sky is overcast and visibility is good. The view pans to the right and captures three skydivers with chutes deployed at an altitude above him. At approximately 4 minutes and 54 seconds into the video, a sound similar to an airplane engine can be heard at an increasing level for 5 seconds. At 4 minutes and 59 seconds, the view pans slightly left and a sound similar to an impact is heard. The view becomes blurry and pans rapidly. At 5 minutes and 2 seconds, three frames capture what appears to be an aircraft in close proximity banking away and to the right of the camera's view. The view continues to pan rapidly for about 6 seconds showing shots of the ground, sky, and parachute. The camera stabilizes and records until impact with the ground at 5 minutes and 46 seconds. One of the master tandem jumpers on that jump stated that the pilot did not give a briefing on which runway or approach he was going to use. The norm is for the jumpers to avoid crossing runways below 1,000 feet and to stay away about 300 feet from the runways, and the pilot to avoid jumpers at all time. Due to the amount of jumps that are performed per day there is no briefing before each flight. Approaches and runway selection depends on the individual pilot. A representative of the operator stated that only verbal guidance is given to the pilots to follow the FAA rules and it up to their discretion for approaches and runway selection. The acting airport manager stated that there is no agreement for airport operations between the skydive operator and the city, only the lease agreement. The city did develop a voluntary noise abatement procedure outlining areas to avoid. The several pilots at the airport stated that for several years they communicated with the city regarding safety concerns with approaches and runway selection by the skydive operator. They stated the city did not correct the situation.

AIRCRAFT 1 CAUSE REPORT

The pilot's inadequate visual lookout.

END REPORT

ASIAS BRIEF REPORT

GENERAL INFORMATION

Data Source: NTSB AVIATION ACCIDENT/INCIDENT DATABASE
Event Id: 20001213X27750
Local Date: 02/12/1989
Local Time: 1655
State: AZ
City: GREEN VALLEY
Airport Name:
Event Type: ACCIDENT
Injury Severity: NONE
Record Status:
Mid Air Collision: NO
Event Location: OFF AIRPORT/AIRSTRIP

WEATHER INFORMATION

Weather Briefing Complete: UNKNOWN
Brief Source:
Basic Weather Conditions: VISUAL METEOROLOGICAL COND
Light Condition: DAY
Cloud Condition: SCATTERED
Cloud Height above Ground Level (ft): 17000
Ceiling Height above Ground Level (ft): 0
Cloud Type: NONE
Visibility RVR (ft): 0
Visibility RVV (sm): 0
Visibility (sm): 70
Wind Direction (deg): 290
Wind Condition Flag: U
Wind Speed (knots): 18
Wind Condition Indicated: Unknown
Visibility Restrictions:
Precipitation Type:

AIRCRAFT INFORMATION

Aircraft 1

Category of Operation:	
Aircraft Type:	AIRPLANE
Aircraft Homebuilt:	NO
Aircraft Damage:	SUBSTANTIAL
Phase of Flight:	LANDING
Aircraft Make:	CESSNA
Aircraft Model:	CE-152
Aircraft Series:	
Operator Doing Business As:	
Operator Name	
Owner Name	GREGORY, GEORGE T. JR.
NTSB Report Number:	LAX89LA110
Number of Seats:	2
Number of Cabin Crew Seats:	
Number of Flight Crew Seats:	
Number of Passenger Seats:	
Number of Engines:	1
ELT Installed:	YES
ELT Operated:	NO
ELT Type:	
Aircraft Use:	PERSONAL
Type of Operation:	PART 91: GENERAL AVIATION
Departure Airport Id:	TUS
Departure City:	TUCSON
Departure State:	ARIZONA
Last Departure Point:	NO
Destination Local:	DEST & DEPARTURE SAME, ACCIDENT CAN OCCUR ANYWHERE
Destination Airport Id:	
Destination City:	
Destination State:	
Runway Id:	0
Runway Length:	0
Runway Width:	0
Flight Plan Filed:	NONE
Domestic/International:	
Passenger/Cargo:	
Registration Number:	N5496B
Air Carrier Operating Certificates:	NO
Air Carrier Other Operating Certificates:	NO

Rotocraft/Agriculture Operating Certificate: UNKNOWN
Cert Max Gross Wgt: 1670
Aircraft Fire: NONE
Aircraft Explosion: NONE
Landing Gear:
ATC Clearance
Landing Gear
Runway Condition
Landing Surface

ENGINE INFORMATION

Aircraft 1 - Engine #:1

Engine Type: RECIPROCATING
Engine Manufacturer LYCOMING
Engine Model O-235-L2C
Engine Horsepower 110
Engine Thrust HP
Carb/Injection CARBURETOR
Propeller Type

Injury Summary for Aircraft 1

	Fatal	Serious	Minor	None
Crew	0	0	0	1
Pass				1
Total	0	0	0	2

Pilot-in-Command for Aircraft 1

Certificates: STUDENT

Ratings:

Plane:

Non-Plane:

Instrument:

Instruction:

Crew Age: 36

Crew Sex: M

Crew Resident State:
 Crew Resident Country:
 Had Current BFR: U
 Months Since Last BFR:
 Medical Certificate: CLASS 3
 Medical Certificate Validity: VALID MEDICAL--NO WAIVERS/LIM.

Flight Time (hours)
 Total : 26
 Make/Model : 0
 Instrument : 0
 Multi-Engine : 0
 Last 24 Hours : 0
 Last 30 Days : 0
 Last 90 Days : 0
 Rotocraft : 0

Sequence of Events

Aircraft 1

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

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	1	OBJECT	WIRE, TRANSMISSION		FACTOR
2	2	PROPER ALTITUDE	NOT MAINTAINED	PILOT IN COMMAND	CAUSE
3	3	LACK OF TOTAL EXPERIENCE		PILOT IN COMMAND	FACTOR
4	2	JUDGMENT	POOR	PILOT IN COMMAND	CAUSE

AIRCRAFT 1 PRELIMINARY REPORT

AIRCRAFT 1 FINAL REPORT

DURING CRUISE FLIGHT, THE STUDENT PILOT INITIALLY REPORTED, THE AIRPLANE COLLIDED WITH A BIRD. THE PILOT REPORTED THAT THE RUDDER CONTROL WAS NOT OPERATING AND DURING THE FORCED LANDING ON A HIGHWAY THE AIRPLANE COLLIDED WITH A TRANSMISSION WIRE. IT WAS POINTED OUT THAT THERE WAS NO EVIDENCE OF A BIRD STRIKE. THE PILOT THEN CHANGED HIS STORY AND STATED THAT HE COLLIDED WITH A PARACHUTIST. THERE WAS NO

REPORT OF A MISSING PERSON OR INCIDENT IN THE AREA. THE PILOT THEN STATED THAT THE AIRPLANE COLLIDED WITH SOMETHING. A ROUND GOUGE WAS FOUND ON THE TOP ONE THIRD OF THE VERTICAL STABILIZER. THE STABILIZER WAS BENT SLIGHTLY TO THE LEFT SIDE AND PARTIALLY JAMMED THE MOVEMENT OF THE RUDDER. THE STUDENT PILOT WAS CARRYING A PASSENGER WHO STATED THAT HE WAS ASLEEP AND HAD NO KNOWLEDGE OF THE ACCIDENT THE STUDENT PILOT DID NOT FILE AN ACCIDENT REPORT.

AIRCRAFT 1 CAUSE REPORT

THE STUDENT PILOT DISPLAYED POOR JUDGEMENT IN NOT MAINTAINING PROPER ALTITUDE. A FACTOR CONTRIBUTING TO THE ACCIDENT WAS THE PILOT'S OVERALL LACK OF EXPERIENCE.

END REPORT

ASIAS BRIEF REPORT

GENERAL INFORMATION

Data Source: NTSB AVIATION ACCIDENT/INCIDENT DATABASE
Event Id: 20050602X00712
Local Date: 05/26/2005
Local Time: 1500
State: WI
City: STURTEVANT
Airport Name: SYLVANIA
Event Type: ACCIDENT
Injury Severity: MINOR
Record Status:
Mid Air Collision: NO
Event Location: ON AIRPORT/AIRSTRIP

WEATHER INFORMATION

Weather Briefing Complete:
Brief Source:
Basic Weather Conditions: VISUAL METEOROLOGICAL COND
Light Condition: DAY
Cloud Condition:
Cloud Height above Ground Level (ft):
Ceiling Height above Ground Level (ft): 8000
Cloud Type: BROKEN
Visibility RVR (ft):
Visibility RVV (sm):
Visibility (sm): 10

Wind Direction (deg): 260
Wind Condition Flag: Y
Wind Speed (knots): 7
Wind Condition Indicated:
Visibility Restrictions:
Precipitation Type:

AIRCRAFT INFORMATION

Aircraft 1

Category of Operation:
Aircraft Type: AIRPLANE
Aircraft Homebuilt: NO
Aircraft Damage: SUBSTANTIAL
Phase of Flight: APPROACH - VFR PATTERN - FINAL APPROACH
Aircraft Make: PILATS
Aircraft Model: PC-6
Aircraft Series:
Operator Doing Business As:
Operator Name
Owner Name CAB AIR
NTSB Report Number: CHI05LA130
Number of Seats: 11
Number of Cabin Crew Seats:
Number of Flight Crew Seats:
Number of Passenger Seats:
Number of Engines: 1
ELT Installed: NO
ELT Operated: UNKNOWN
ELT Type:
Aircraft Use: SKYDIVING
Type of Operation: PART 91: GENERAL AVIATION
Departure Airport Id: C89
Departure City: STURTEVANT
Departure State: WISCONSIN
Last Departure Point: YES
Destination Local: DEST & DEPARTURE SAME, ACCIDENT CAN OCCUR ANYWHERE
Destination Airport Id:
Destination City:
Destination State:
Runway Id: 26R
Runway Length: 2343
Runway Width: 120

Flight Plan Filed: NONE
Domestic/International:
Passenger/Cargo:
Registration Number: N346F
Air Carrier Operating Certificates: NO
Air Carrier Other Operating Certificates: UNKNOWN
Rotocraft/Agriculture Operating Certificate:
Cert Max Gross Wgt: 4850
Aircraft Fire: NONE
Aircraft Explosion: NONE
Landing Gear: FIXD
ATC Clearance
Landing Gear
Runway Condition
Landing Surface

ENGINE INFORMATION

Aircraft 1 - Engine #:1

Engine Type: TURBO PROP
Engine Manufacturer: PRATT & WHITNEY
Engine Model: PT6A-60
Engine Horsepower: 550
Engine Thrust: HP
Carb/Injection
Propeller Type

Injury Summary for Aircraft 1

	Fatal	Serious	Minor	None
Crew	0	0	1	0
Pass				
Total	0	0	1	0

Pilot-in-Command for Aircraft 1

Certificates: COMMERCIAL
Ratings:
Plane:

Non-Plane:

Instrument:

Instruction:

Crew Age: 52

Crew Sex: M

Crew Resident State:

Crew Resident Country:

Had Current BFR:

Months Since Last BFR: 01-DEC-04

Medical Certificate: CLASS 2

Medical Certificate Validity: WITHOUT WAIVERS/LIMITATIONS

Flight Time (hours)

Total : 18000

Make/Model : 30

Instrument : 0

Multi-Engine : 9000

Last 24 Hours : 3

Last 30 Days : 40

Last 90 Days : 70

Rotocraft : 0

Sequence of Events

Aircraft 1

Occurrence #: 1

IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	2	CLEARANCE	NOT MAINTAINED	PILOT IN COMMAND	CAUSE
2	2	VISUAL LOOKOUT	INADEQUATE	OTHER PERSON	CAUSE
3	1	OBJECT	OTHER PERSON		FACTOR
4	1	AIRPORT/FACILITIES	OTHER		FACTOR
4	2	PROCEDURES/DIRECTIVES	NOT COMPLIED WITH	NO PERSON SPECIFIED	

Occurrence #: 2

LOSS OF CONTROL - IN FLIGHT

Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor

1	2	DIRECTIONAL CONTROL	NOT POSSIBLE	PILOT IN COMMAND	FACTOR
2	2	ALTITUDE	LOW	NO PERSON SPECIFIED	FACTOR

Occurrence #: 3

IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	1	OBJECT	TREE(S)		FACTOR

Occurrence #: 4

IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

Event Seq #	Event Group Code	Subject	Modifier	Personnel	Cause/Factor
1	1	TERRAIN CONDITION	GROUND		

AIRCRAFT 1 PRELIMINARY REPORT

On May 26, 2005, about 1500 central daylight time, a Pilatus PC-6, N346F, piloted by a commercial pilot, was substantially damaged when it impacted trees while approaching to land on runway 26R (2,343 feet by 120 feet, turf) at Sylvania Airport (C89), Sturtevant, Wisconsin. The airplane was engaged in skydiving activities and was approaching to land when it struck a parachutist. The airplane veered to the right and struck the trees. The flight was being conducted under 14 CFR Part 91 without a flight plan. Visual meteorological conditions prevailed. The pilot and parachutist sustained minor injuries. The local flight originated from C89 about 1445. In his written statement, the pilot reported that the skydiving jump run was conducted at 13,000 feet mean sea level (msl). He noted that after dropping the jumpers he initiated a descent at 120 knots with the engine "power back." He stated that on final approach for landing, about 600 feet above ground level (agl), one jumper had landed and two others were in sight. The pilot added: "I checked to make sure no one was on the runway and it was clear. At 30 - 50 [feet agl] and 50 [knots airspeed] . . . a [parachutist] made a rapid descent and accelerated from behind my right wing." The pilot reported the parachutist hit the right wing about 5 feet from the tip causing the airplane to enter a 45-degree banked turn to the right. He was unable to recover and the airplane struck trees north of the airport. The parachutist struck during the accident sequence reported that he "couldn't quite make it to the landing area" because the "spot was a little long." He noted that as a result he intended to land in front of the hangar. He reported he checked for traffic and saw the other parachutists, but did not hear or see the jump plane. He stated that they were about 40 feet agl when they collided. The parachutist stated: "I have a very high performance canopy and I descended quickly over the [airfield]. I crossed the far north edge of the grass runway for only an instant. I came from above and when my canopy leveled out, I was in front of the right wing." A second parachutist on the same jump was a witness to the accident. She noted that she and the parachutist involved in the accident were approaching the drop zone for landing. She reported that she was approximately 10 feet higher than the first parachutist when he was struck by the jump plane. She stated that the first parachutist had made his final turn prior to landing and was about 25 feet agl when he was struck. She recalled that the first parachutist was about 1/3 of the way down the runway at the time. She noted that the drop zone for experienced parachutists was located north of the turf runway and west of the hangar buildings. She added that the jump planes normally used the

adjacent turf runway for landing. A witness driving on a nearby interstate highway reported that he was approximately 1/2 mile from the airport and saw the events leading up to the accident. He stated that he saw the jump airplane flying from east to west approaching the airport, in a wings level attitude, at a "very low" altitude. He noted that there were two parachutists. One was about twice as high as the airplane and "dropping like a rock." He noted that the parachute canopy was nearly vertical. He estimated that the parachutist's body formed an approximate 10° - 20° angle with the horizon. The second parachutist was descending "normally." The parachutist struck by the jump plane, and a second parachutist, were wearing helmet-mounted cameras, which recorded the accident sequence. The NTSB Vehicle Recorders Laboratory viewed the tapes and prepared a summary of each recording. The camera worn by the parachutist struck by the jump plane included 10 separate jumps prior to the accident jump. On the accident jump, the struck parachutist exited the airplane and descended through a cloud about 21 seconds later. The parachutist deployed his canopy about 44 seconds after exiting the airplane. The accident airplane came into view of the camera and appeared to be on approach to the turf runway 26R. During this time, the parachutist was traveling along runway 26R toward the approaching airplane. The parachutist executed a left 180-degree turn and the airplane passed out of the camera's view. Four seconds later, sounds similar to an airplane engine are heard at an increasing level until the recording ends abruptly one second after that. The camera worn by the second parachutist included only the accident jump. The second parachutist exited the jump plane and passed through a broken cloud layer about 18 seconds later. The second parachutist deployed her chute 46 seconds after exiting the airplane. The parachutist struck by the jump plane entered the field of view moving from left to right. The jump plane entered the camera's field of view from the lower left about 1/2 second later. The plane appeared to be aligned with runway 26R, with flaps down. Less than one second after the jump plane entered the camera's field of view, the right wing of the plane contacted the parachutist near the back of the neck. The parachutist was dragged for about 1/2 second before the canopy pulled him clear of the airplane. The jump plane yawed to the right and then entered what appeared to be a coordinated right turn, with the right wingtip nearly striking the ground. The airplane's bank angle increased until it disappeared behind a hangar. Advisory Circular 90-66A, Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Towers, was intended to call "attention to regulatory requirements and recommended procedures for aeronautical operations at airports without operating control towers." Concerning parachute operations, it stated: "When a drop zone has been established on an airport, parachutists are expected to land within the drop zone. . . . Pilots and parachutists should both be aware of the limited flight performance of parachutes and take steps to avoid any potential conflicts between aircraft and parachute operations." Title 14 CFR 105.17, Flight visibility and clearance from cloud requirements, stated that parachute operations may not be conducted "into or through a cloud." In addition, the regulation stated that below 10,000 feet msl, a minimum horizontal distance of 2,000 feet and flight visibility of 3 statute miles (sm) must be maintained. For operations above 10,000 feet msl, one mile horizontal distance and 5 sm must be maintained.

AIRCRAFT 1 FINAL REPORT

The parachute jump plane was substantially damaged when it collided with a parachutist on final approach for landing. The pilot was not able to maintain directional control and the airplane impacted trees and terrain near the airport. The pilot stated that he was on final approach for landing, when a parachutist "made a rapid descent and accelerated from behind [his] right wing." The parachutist hit the right wing and the airplane entered an unrecoverable descending right turn, subsequently striking a tree line. The parachutist involved in the accident stated that he "couldn't quite make it to the landing area" because the "spot was a little long." He noted that as a result he intended to land in front of the hangar. He reported he did not hear or see the jump plane. The parachutist stated: "I have a very high performance canopy and I descended quickly over the [airfield]. I crossed the far north edge of the grass runway for only an instant. I came from above and when my canopy leveled out, I was in front of the right wing." The drop zone for experienced parachutists was located north of the turf runway and west of the hangar buildings. Jump planes normally used the adjacent turf runway for landing. Advisory Circular 90-66A, Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Towers, stated: "When a drop zone has been established on an airport, parachutists are expected to land within the drop zone. . . . Pilots and parachutists should both be aware of the limited flight performance of parachutes and take steps to avoid any potential conflicts between aircraft and parachute operations." Helmet-mounted video cameras from the parachutist involved in the accident, as well as a second parachutist on the accident jump, revealed that both parachutists descended through a cloud prior to canopy deployment. Federal regulations stated that parachute operations may not be conducted "into or through a cloud."

AIRCRAFT 1 CAUSE REPORT

Failure of the jump plane pilot to maintain clearance from the parachutist descent area/drop zone until assured that all jumpers had landed, and the parachutist's failure to maintain an adequate visual lookout for the jump plane during all phases of the jump. Contributing factors were the inability of the pilot to maintain directional control of the airplane after collision with the parachutist, the airplane's low altitude at the time of the collision, the parachutist, and the trees. An additional factor was the proximity of the runway to the drop zone.

END REPORT