National Transportation Safety Board
Aviation Accident Final Report

Location:	Bunnell, FL	**Accident Number:**	NYC06MA208
Date & Time:	08/25/2006, 1308 EDT	**Registration:**	N171MA
Aircraft:	Mitsubishi MU-2B-40	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot had received an outlook briefing during the morning hours before the accident. The briefing included information regarding widely scattered thunderstorms and rain showers along portions of the pilot's planned route of flight. At the time of the accident, a convective weather significant to the safety of all aircraft (convective SIGMET) was in effect for the pilot's route of flight, and the information about the convective SIGMET was broadcast to the pilot by air traffic control (ATC). Several airplanes in the vicinity of the accident airplane were deviating around weather. Conversations between the accident pilot and the ATC controller were consistent with the accident airplane's weather radar functioning, and the possibility that the accident airplane's weather radar was providing more information than the ATC weather radar. Although the pilot initially declined a deviation query by ATC, he later accepted one. Shortly after, the pilot was unable to maintain his assigned altitude of 28,000 feet msl (FL 280), and the airplane impacted terrain consistent with a vertical descent. At the time of the accident, at FL 280, weak to moderate weather radar echoes existed. Very strong to intense weather radar echoes were seen about FL 200. The ATC facility was equipped with NEXRAD-derived weather displays. The weather displays had four settings: below FL 240, between FL 240 and FL 330, above FL 330, and from sea level to FL 600. At the time of the accident, the ATC controller's weather display indicated weak to moderate echoes above FL240. Very strong to intense weather radar echoes existed about FL200; however, the ATC controller did not have his weather display set to that altitude as he was not controlling traffic at that altitude. The investigation could not determine if the pilot was aware of the stronger intensity echoes below his altitude, or if the airplane's weather radar was depicting the stronger echoes. Examination of the wreckage did not reveal any preimpact mechanical malfunctions.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadvertent encounter with thunderstorms.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings
1. WEATHER CONDITION - THUNDERSTORM
2. (C) FLIGHT INTO ADVERSE WEATHER - INADVERTENT - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On August 25, 2006, at 1308 eastern daylight time, a Mitsubishi MU-2B-40, N171MA, was destroyed during an in-flight separation and impact with terrain near Bunnell, Florida. The certificated commercial pilot and passenger were fatally injured. Visual meteorological conditions prevailed near the accident site, for the flight that departed Monroe County Airport (KBMG), Bloomington, Indiana; destined for Governors Harbour Airport (MYEM), Eleuthera Island, Bahamas. An instrument flight rules flight plan was filed for the personal international flight conducted under 14 CFR Part 91.

At 1222, the pilot made initial contact with the Jacksonville, Florida, air route traffic control center (ARTCC). At that time, the airplane was at 28,000 feet msl (FL 280).

At 1241, the pilot was assigned a different radio frequency for Jacksonville ARTCC as the airplane entered a different sector of airspace. The pilot acknowledged and complied with the frequency change.

At 1251, several aircraft in the sector had deviated around convective weather via their own navigation, without assistance from the air traffic controller, except for obtaining approval for course deviations. The air traffic controller then asked the accident pilot if he was anticipating a need to deviate from course before reaching Ormond Beach, Florida. The pilot initially responded that no deviations would be needed.

At 1252, the controller broadcast an advisory for convective weather significant to the safety of all aircraft (convective SIGMET 39E), for the areas covering South Carolina, Georgia, Florida, and Florida Coastal waters. The pilot then advised the controller that he reconsidered a deviation, and inquired when he could proceed direct to MYEM. The pilot added that a deviation would depend on when he could go direct to MYEM. The pilot then asked if there was any possibility he could go direct to MYEM before reaching Ormond Beach, Florida. The controller responded that because of traffic, he needed the pilot to go to Ormond Beach before going direct to MYEM, and asked what deviation the pilot needed. The pilot responded that if he needed to deviate, it would be 10 degrees to the right, and wouldn't be needed for about 60 miles. The air traffic controller approved the deviation, and asked the pilot if he could make it back over Ormond Beach after the deviation. The pilot replied no, that Ormond Beach was under weather at the moment. The air traffic controller made a comment to the pilot about the accident airplane having better weather radar than he did. The air traffic controller then approved the deviation, and requested that the pilot advise when he could proceed direct to Melbourne, Florida. The pilot responded, "...Ten right now and direct Melbourne when able, I can handle that."

At 1306, the pilot reported to air traffic control (ATC) that he was unable to maintain altitude. The air traffic controller repeatedly attempted to contact the pilot, but no further radio communications were received from the accident airplane.

The accident occurred during the hours of daylight, located approximately 29 degrees, 18.80 minutes north latitude, and 81 degrees, 14.82 minutes west longitude.

PILOT INFORMATION

The pilot held a commercial pilot certificate, with ratings for airplane multiengine land and

instrument airplane. He also held a private pilot certificate, with a rating for airplane single engine land. The pilot's most recent FAA second class medical certificate was issued on May 2, 2006.

The pilot's logbook was not recovered; however, he had completed a "Pilot Information Form" on May 6, 2006, when he attended a flight school for recurrency training in his Mitsubishi MU-2B-40. According to that form, the pilot had accumulated a total flight experience of approximately 3,800 hours; of which, 3,400 hours were in multiengine land airplanes, and 1,700 hours in the same make and model as the accident airplane. The pilot also reported about 400 hours of actual instrument experience.

AIRCRAFT INFORMATION

The airplane was maintained under a manufacturer's approved inspection program (MAIP). The airplane's most recent inspection was completed on May 3, 2006. The inspection complied with a 100-hour/1 year and 200-hour/1 year inspection, in accordance with the Mitsubishi Maintenance Requirement Manual. During the inspection, corrosion was removed from the landing gear area and wing skin. At the time of the inspection, the airplane had accumulated approximately 3,802 hours of operation.

METEOROLOGICAL INFORMATION

About 0736, the pilot telephoned the Lansing, Michigan automated flight service station (AFSS). The pilot stated that he had a flight plan on file for a trip to Bloomington, Indiana, and continuing on. He then requested the outlook for Bloomington in 2 hours, and for South Florida in the afternoon, as he was heading to the Bahamas.

The weather briefer provided the pilot with advisories to Bloomington, the Bloomington forecast, and a forecast for South Florida. The forecast for South Florida included scattered clouds at 2,000 feet and 12,000 feet, with isolated thunderstorms and rain showers becoming widely scattered by 1400. The pilot indicated that he did not need any additional weather information.

At the time of the accident, convective SIGMET 39E was in effect for the route the pilot was flying. The convective SIGMET was for an area of thunderstorms moving 270 degrees at 15 knots, with tops to FL 450.

According to weather radar data, at FL 280, where the pilot reported that he was unable to maintain altitude, weak to moderate weather radar echoes existed. Very strong to intense weather radar echoes were seen about FL 200 (for further information, see Meteorological Factual Report in the public docket).

The reported weather at an airport about 8 miles east of the accident site, at 1250, was: wind from 100 degrees at 9 knots, gusting to 15 knots; visibility 10 miles; scattered clouds at 2,500 feet; scattered clouds at 5,000 feet; temperature 84 degrees F; dew point 71 degrees F; altimeter 29.89 inches Hg.

WRECKAGE INFORMATION

The main wreckage came to rest upright in a wildlife refuge, oriented about a 060-degree magnetic heading. Both wings had separated from the airframe, but remained attached to each other through the center wing section, and were located about 1/2-mile south of the main wreckage. The vertical stabilizer remained attached to the airframe, but the rudder had

separated. The left and right horizontal stabilizers had separated; the left stabilizer was located near the main wreckage, and the right stabilizer was found near the wings.

The cockpit and cabin area were crushed, and imbedded several feet into the ground. No horizontal ground scars were observed near the main wreckage, consistent with a vertical impact. The landing gear was observed in the retracted position. Flight control continuity for the elevator and rudder were confirmed from the cockpit controls to their respective bellcranks near the point of separation. Left and right wing spoiler control continuity was confirmed from the cockpit to the wing center section (mixer). Rudder and elevator trim control continuity was confirmed from the cockpit, through four trim cables (two each), to the broom-straw separations near the rear of the airplane.

The wreckage was reexamined after the wings, engines, horizontal stabilizers, and rudder were recovered. The outboard section of the left wing had separated about 5 feet from the wing root, and the left wingtip fuel tank had also separated from the left wing. The outboard section of left wing and left wingtip fuel tank were found about 1/8-mile south of the right wing and inboard section of left wing. The left engine remained attached to the left wing, and was removed for examination. Due to impact damage, the propeller could only be rotated approximately five degrees; however, rotation was observed on the third stage turbine rotor when the propeller was rotated. The first stage compressor impeller was intact, and no leading edge damage was observed on the compressor blades. Rotational scoring was noted on the third stage turbine blade tip shroud. All four propeller blades remained attached to the propeller hub. The blades appeared in the feathered position, with no rotational damage noted.

The right wing remained intact, except for the right wingtip fuel tank that had separated. The right wingtip fuel tank was found next to the right wing, consistent with impact damage separation. The right engine remained attached to the right wing, and was removed for examination. Due to impact damage, the propeller could not be rotated. The first stage compressor impeller was intact, and no leading edge damage was observed on the compressor blades. Rotational scoring was noted on the third stage turbine blade tip shroud. All four propeller blades remained attached to the propeller hub. The blades appeared in the feathered position, with no rotational damage noted.

The right horizontal stabilizer remained attached through the center section, and was bent upward approximately 45 degrees. The left horizontal stablizer had separated near the root. The elevator trim tab remained attached to the left horizontal stabilizer. The lower portion of the rudder had separated and was recovered about 1/4-mile southwest of the stabilizer. The upper portion of the rudder was not recovered.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the St. Johns, Putnam, and Flagler Counties Medical Examiner's Office, St. Augustine, Florida.

Toxicological testing was conducted on the pilot at the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicology report revealed:

"...28 (mg/dL, mg/hg) ETHANOL detected in Urine.

44 (mg/dL, mg/hg) ETHANOL detected in Muscle.

81 (mg/dL, mg/hg) ETHANOL detected in Brain.

1 (mg/dL, mg/hg) N-PROPANOL detected in Urine.

3 (mg/dL, mg/hg) N-PROPANOL detected in Brain.

7 (mg/dL, mg/hg) N-BUTANOL detected in Muscle.

1 (mg/dL, mg/hg) N-BUTANOL detected in Brain...

...2.04 (pmol/nmol) SEROTONIN METABOLITE RATIO detected in Urine."

Putrefaction was noted as "yes," and the report also noted that a seratonin metabolite ratio value < 15 pmol/nmol is not consistent with ethanol ingestion.

TESTS AND RESEARCH

The left wing front and rear attachment fittings, right wing front attachment fitting, stabilizer left and right attachment fittings, left wing tip tank front and rear attachment fittings, and a Sperry RT-400 weather radar were retained for further examination.

Metallurgical examination of all attachment fittings at the Safety Board's Materials Laboratory revealed fracture features consistent with overstress, with no preexisting cracks or corrosion was detected (for more information, see Materials Laboratory Factual Report in the public docket).

Due to impact damage, the Sperry RT-400 weather radar was unable to be powered and tested. The power switch was found in the "ON" position, with intensity set to maximum, the gain set to maximum, and the antenna tilt control set approximately 4 degrees up.

A personal digital camera was recovered from the wreckage. A SanDisk Ultra II 2.0 SD flash memory card was removed from the camera, and forwarded to the Safety Board's Vehicle Recorder Laboratory for examination. There was no evidence of damage to the card, which would preclude data extraction; however, attempts to access data were unsuccessful (for more information, see Special Study in the public docket).

AIR TRAFFIC CONTROL

The Safety Board formed an ATC group, and convened at the Jacksonville Air Route Traffic Control Center on September 5, 2006. The group interviewed facility managers and controllers, reviewed radio communications, and reviewed radar data.

Review of ATC procedures revealed that traffic separation was a controller's primary duty, and weather information was required to be provided when workload permitted. The ATC controller provided a broadcast regarding SIGMET 39E. In addition, the ATC controller was actively soliciting and approving pilot deviations for weather.

Conversations between the accident pilot and the ATC controller were consistent with the accident airplane's weather radar functioning, the accident pilot being aware of the weather over Ormond Beach, and the possibility that the accident airplane's weather radar was providing more information than the ATC weather radar.

The ATC facility was equipped with NEXRAD-derived weather displays. The weather displays had four settings: below FL 240, between FL 240 and FL 330, above FL 330, and from sea level to FL 600. At the time of the accident, the ATC controller's weather display indicated

weak to moderate echoes above FL 240. Very strong to intense weather radar echoes existed about FL 200; however, the ATC controller did not have his weather display set to that altitude as he was not controlling traffic at that altitude (for more information, see ATC Group Chairman's Factual Report in the public docket).

ADDITIONAL INFORMATION

The wreckage was released to a representative of the owner's insurance company on August 29, 2006.

Pilot Information

Certificate:	Commercial; Private	**Age:**	65, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	05/01/2006
Occupational Pilot:		**Last Flight Review or Equivalent:**	05/01/2006
Flight Time:	3800 hours (Total, all aircraft), 1700 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mitsubishi	**Registration:**	N171MA
Model/Series:	MU-2B-40	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	431 S.A.
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	05/01/2006, Continuous Airworthiness	**Certified Max Gross Wt.:**	10470 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo Prop
Airframe Total Time:	3802 Hours as of last inspection	**Engine Manufacturer:**	Honeywell
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TPE331-10-551
Registered Owner:	Drug and Laboratory Disposal Inc.	**Rated Power:**	715 hp
Operator:	Ward T. Walter	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	OMN, 29 ft msl	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	1250 EDT	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Scattered / 2500 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	29°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bloomington, IN (KBMG)	**Type of Flight Plan Filed:**	IFR
Destination:	Governors Harbo (MYEM)	**Type of Clearance:**	IFR
Departure Time:	1030 EDT	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	29.313333, -81.246944

Administrative Information

Investigator In Charge (IIC):	Robert J Gretz	**Report Date:**	09/27/2007
Additional Participating Persons:	Gary A Vidak; FAA/FSDO; Orlando, FL Marlin J Kruse; Honeywell Aerospace; Phoenix, AZ James E Stermer; Mitsubishi; Addison, TX Thomas McCreary; Hartzell Propeller; Piqua, OH		
Publish Date:			
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