



# National Transportation Safety Board Aviation Accident Final Report

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| <b>Location:</b>        | Argyle, FL           | <b>Accident Number:</b> | DEN06MA119 |
| <b>Date &amp; Time:</b> | 09/01/2006, 1115 CDT | <b>Registration:</b>    | N6569L     |
| <b>Aircraft:</b>        | Mitsubishi MU-2B-35  | <b>Aircraft Damage:</b> | Destroyed  |
| <b>Defining Event:</b>  |                      | <b>Injuries:</b>        | 1 Fatal    |

**Flight Conducted Under:** Part 91: General Aviation - Positioning

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## Analysis

Prior to the accident flight, the pilot obtained a preflight weather briefing and filed an instrument flight rules flight plan. The briefer noted no adverse weather conditions along the route. The airplane departed the airport at 0853, and climbed to FL190. The first two hours of the flight was uneventful, and the aircraft was handed off to Jacksonville Air Route Traffic Control Center (ZJX ARTCC) at 1053. The pilot contacted ZJX Crestview sector at 1054:45 with the airplane level at FL190. At 1102, the Crestview controller broadcasted an alert for Significant Meteorological Information (SIGMET) 32E, which pertained to thunderstorms in portions of Florida southwest of the pilot's route. At 1103, the controller cleared to the airplane to descend to 11,000 feet and the pilot again acknowledged. At 1110:21, the pilot was instructed to contact Tyndall Approach. The pilot checked in with the Tyndall RAPCON North Approach controller at 1110:39. The pilot was told to expect a visual approach. Shortly thereafter, the pilot transmitted, "...we're at 11,000, like to get down lower so we can get underneath this stuff." The controller told the pilot to stand by and expect lower [altitude] in 3 miles. About 15 seconds later, the controller cleared to pilot to descend to 6,000 feet, and the pilot acknowledged. At 1112:27, the pilot was instructed to contact Tyndall Approach on another frequency. The airplane's position at that time was just northwest of REBBA intersection. The Panama sector controller cleared the pilot to descend to 3,000 feet at his discretion, and the pilot acknowledged. There was no further contact with the airplane. The controller attempted to advise the pilot that radar contact was lost, but repeated attempts to establish communications and locate the airplane were unsuccessful. A witness, located approximately 1 mile south of the accident site, reported he heard a "loud bang," looked up and observed the airplane in a nose down spiral. The witness reported there were parts separating from the airplane during the descent. The witness stated it was raining and there was lightning and thunder in the area. Local authorities reported that the weather "was raining real good with lightning and the thunderstorm materialized very quickly." The main wreckage came to rest near the edge of a swamp in tree covered and high grassy terrain. The left wing, left engine, and the left wing tip tank were located in a wooded area approximately 0.6 miles northwest of the main wreckage. The left wing separated from the airplane inboard of the left engine and nacelle. Examination of the fracture surfaces indicated that both the front and rear spars failed from "catastrophic static up-bending overstress..." The airplane flew through an intense to

extreme weather radar echo containing a thunderstorm. Although the controllers denied that there was any weather displayed ahead of the airplane, recorded radar and display data indicated that moderate to extreme precipitation was depicted on and near the route of flight. During the flight, the pilot was given no real-time information on the weather ahead. The airplane was equipped with a weather radar system and the system provided continuous en route weather information relative to cloud formation, rainfall rate, thunderstorms, icing conditions, and storm detection up to a distance of 240 miles. No anomalies were noted with the airframe and engines.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's inadvertent flight into thunderstorm activity that resulted in the loss of control, design limits of the airplane being exceeded and subsequent in-flight breakup. A contributing factor was the failure of air traffic control to use available radar information to warn the pilot he was about to encounter moderate, heavy, and extreme precipitation along his route of flight,

### Findings

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Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: DESCENT - NORMAL

#### Findings

1. (F) IN FLIGHT WEATHER AVOIDANCE ASSISTANCE - NOT ISSUED - ATC PERSONNEL(ARTCC)
2. (C) FLIGHT INTO ADVERSE WEATHER - INADVERTENT - PILOT IN COMMAND

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Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: DESCENT - UNCONTROLLED

#### Findings

3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
4. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
5. (C) WING,SPAR - FAILURE

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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

#### Findings

6. TERRAIN CONDITION - GROUND

## Factual Information

### HISTORY OF FLIGHT

On September 1, 2006, approximately 1115 central daylight time, a Mitsubishi MU-2B-35 twin-engine turboprop airplane, N6569L, was destroyed when it impacted terrain near Argyle, Florida. The airline transport pilot, who was the sole occupant, was fatally injured. The airplane was registered to Intercontinental Jet Incorporated, Tulsa, Oklahoma, and operated by Berg Steel Pipe Corporation, Panama City, Florida. Day instrument meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan was filed for the Title 14 Code of Federal Regulations Part 91 positioning flight. The flight departed Tulsa International Airport (TUL), Tulsa, Oklahoma, approximately 0853, and was en route to Panama City Bay County International Airport (PFN), Panama City, Florida.

According to transcripts provided by Lockheed Martin, the pilot contacted the McAllister, Oklahoma, Federal Contract Facility at 0726 to file an IFR flight plan and obtain a preflight weather briefing for the flight from TUL to PFN. The briefer noted no adverse weather conditions along the route, stating that the pilot could expect to encounter only some showers between Tulsa and Fort Smith, Arkansas, and no other significant weather. The pilot then filed a flight plan from TUL direct to DEFUN intersection (near DeFuniak Springs, Florida), then direct to PFN, requesting flight level (FL) 190. The briefer accepted the flight plan, asked the pilot if he had any further questions, then terminated the call.

The airplane departed TUL at 0853 and climbed to FL190. The flight was uneventful, and the aircraft was handed off to Jacksonville Air Route Traffic Control Center (ZJX ARTCC) at 1053. The pilot contacted ZJX Crestview sector at 1054:45 with the airplane level at FL190. At 1100, the radar controller instructed the pilot to descend to 15,000 feet mean sea level (msl) and provided the Crestview altimeter setting. The pilot acknowledged. At 1102, the Crestview controller broadcasted an alert for Significant Meteorological Information (SIGMET) 32E, which pertained to thunderstorms in portions of Florida, southwest of the pilot's route. At 1103, the controller cleared the pilot to descend to 11,000 feet, and the pilot again acknowledged. At 1110:21, the pilot was instructed to contact Tyndall Approach on frequency 125.2 MHz.

Review of the interphone communications between the Tyndall Radar Approach Control (RAPCON) North Approach radar assistant and a controller at Eglin Air Force Base (AFB) showed that at 1110:18, the Tyndall radar assistant asked Eglin for information on the intensity of radar-depicted weather in the area of DEFUN intersection (Eglin AFB was responsible for airspace north and west of the Tyndall area, and their system provided good coverage of the accident airplane's track and radar-observed precipitation in the area of the accident). The Eglin controller responded that his display was showing intensities one through six. The Tyndall radar assistant replied, "One through six?...Nothing specific? Okay, thanks," and concluded the call.

The pilot checked in with the Tyndall RAPCON North Approach controller at 1110:39. The pilot reported having automatic terminal information service (ATIS) information Tango. The Tyndall controller advised that Uniform ATIS was current and provided the pilot with the updated information. PFN was reporting estimated wind from 250 degrees at 5 knots, visibility 10 miles, and few clouds at 3,000 feet. The pilot was told to expect a visual approach. He acknowledged the new weather, and then transmitted, "...we're at 11,000, like to get down

lower so we can get underneath this stuff." The controller told the pilot to stand by and expect lower [altitude] in 3 miles. About 15 seconds later, the controller cleared to pilot to descend to 6,000 feet, and the pilot acknowledged.

At 1112:27, the pilot was instructed to contact Tyndall Approach on 119.1 MHz (the Panama sector), and he did so at 1112:42. Recorded keyboard entries obtained from ZJX Data Analysis and Reduction Tool (DART) data reduction showed that the Crestview radar controller dropped the data block for the airplane from her display at 1112:34 as the airplane descended through 10,000 feet. The airplane's position at that time was just northwest of REBBA (accident site located 1.1 nautical miles southeast) intersection.

The Panama controller cleared the pilot to descend to 3,000 feet at his discretion, and the pilot acknowledged. There was no further contact with the airplane. At 1115:40, the Panama controller attempted to advise the pilot that radar contact was lost, but repeated attempts to establish communications and locate the airplane were unsuccessful.

A witness, located approximately 1 mile south of the accident site, reported he heard a "loud bang," looked up and observed the airplane in a nose down spiral toward the terrain. The witness reported there were parts separating from the airplane during the nose-down descent. At the time of accident, the witness stated it was raining and there was lightning and thunder in the area.

Local authorities, who responded to the accident site, reported that the weather "was raining real good with lightning and the thunderstorm materialized very quickly."

#### PERSONNEL INFORMATION

The pilot, who was seated in the left front seat position, held an airline transport pilot certificate, issued May 9, 1975, with an airplane multi-engine land rating, and a commercial pilot certificate with an airplane single-engine land rating. The pilot held type ratings in BE400, DC-B26, DC-3, FA-C123, MU300, G-TBM, L-18, and N-B25 aircraft. The pilot was issued a second-class medical certificate on August 29, 2006, with a limitation for corrective lenses. According to the Federal Aviation Administration's (FAA) airman records, the pilot reported on March 28, 2006, he had accumulated 30,780 total flight hours and 18,650 total flight hours in turboprop airplanes. The pilot's logbooks were not located. According to the pilot's records, on February 28, 2006, at SimCom International Flight Academy, the pilot satisfactorily completed Wings Program Phase IV training requirements outlined in the FAA's Advisory Circular 61-91H.

According to the pilot's son, the pilot had approximately 10,000 flight hours in the Mitsubishi MU-2 model airplanes, and 50 to 100 flight hours in the accident airplane. In addition, the son stated the pilot was a former sales representative and pilot for Mitsubishi.

#### AIRCRAFT INFORMATION

The accident airplane, a long-body Mitsubishi MU-2B-35, serial number 645, was a high performance, high wing, semi-monocoque design airplane. The airplane was powered by two 665-horsepower Honeywell TPE331-6-252M turboprop engines (serial numbers P-20126C and P-20122C). The airplane was equipped with 3-bladed, Hartzell HC-B3TN-5E single acting, hydraulically operated, constant speed with feathering and reversing capability, propellers. Flight controls for the left and right seats were installed in the airplane.

The airplane was equipped with a Bendix/King RDR-1200 weather radar system and an IN-

1102A radar indicator. The RDR-1200 system provided continuous en route weather information relative to cloud formation, rainfall rate, thunderstorms, icing conditions, and storm detection up to a distance of 240 miles. The IN-1102A indicator contained front panel selections of power, range, tilt adjustment of antenna, receiver gain control, hold, self-test, and stab adjust.

The airplane was issued a standard airworthiness certificate on May 6, 1974. The airplane was registered to the owner on September 13, 2004, and was maintained under a manufacturer's inspection program. According to the registered owner, the airplane was on lease to Berg Steel Piper Corporation for a period of months while the operator's airplane underwent maintenance. The accident flight was the first flight of the lease agreement. In addition, the accident airplane was utilized for flight training in the FAA's Flight Standardization Board (FSB) review in 2005.

According to the maintenance records obtained from the registered owner, prior to the accident flight, the airframe had a total time of 6,641.6 hours (Hobbs 2,420.0). The left engine, serial number (S/N) P-20126C, had accumulated 6,530.6 hours and 8,004 cycles since new; 3,808.6 hours and 3,921 cycles since overhaul; and 790.6 hours since hot section overhaul. The right engine, S/N P-20122C, had accumulated 6,565.8 hours and 7,992 cycles since new; 3,843.8 hours and 3,909 cycles since overhaul; and 839.8 hours since hot section overhaul.

At the request of the NTSB investigator-in-charge (IIC), the airframe manufacturer calculated the airplane's weight and balance at takeoff and at the time of the accident. According to the registered owner, the airplane's fuel tanks were topped off prior to departure. The estimated weight of baggage in the rear of the airplane was 100 pounds (lbs). The airplane's takeoff weight and center of gravity were calculated to be 10,378.20 lbs and 197.54 inches, respectively. The airplane's weight and center of gravity at the time of the accident were calculated to be 8,626.20 lbs and 197.66 inches, respectively. The airplane's maximum takeoff weight was 10,775 lbs and the center of gravity limits were 190.9 to 199.4 inches.

#### METEOROLOGICAL INFORMATION

At 1012, the Bob Sikes Airport (CEW), Crestview, Florida, automated surface observing system (ASOS), located approximately 25 miles northwest of the accident site, special observation reported the wind from 260 degrees at 4 knots, visibility 10 statute miles, scattered clouds at 5,500 feet, overcast ceiling at 7,500 feet, temperature 23 degrees Celsius, dew point 19 degrees Celsius, and altimeter setting of 29.92 inches of Mercury. Remarks included distant lightning in the south, thunderstorm ended at 1006, and rain ended at 0955.

At 1053, the CEW ASOS reported the wind calm, visibility 10 statute miles, broken cloud ceiling at 6,500 feet, overcast at 9,000 feet, temperature 23 degrees Celsius, dew point 20 degrees Celsius, and altimeter setting of 29.92 inches of Mercury. Remarks included distant lightning in the southeast.

Level III Doppler Weather Radar data from the Fort Rucker, Alabama (EOX), WSR-88D were reviewed using McIDAS (Man-computer Data Access System). For the 1112 to 1117 scans, the EOX Composite Reflectivity Image indicated that the weather echo intensities (VIP Level 5) occurred along the route of flight and near the accident site.

Level II Doppler Weather Radar data from the Tallahassee, Florida (TLH), WSR-88D were reviewed using IDV (Integrated Data Viewer). For the 1108:54 scan, the TLH Base Reflectivity Image indicated extreme (VIP Level 6) weather radar echoes in the accident area at the time of

the last air traffic control (ATC) radar contact. For the 1114:38 scan, the TLH Base Reflectivity Image indicated intense (VIP Level 5) weather radar echoes in the accident area at the time of the last ATC radar contact.

There were no SIGMETs, Airmen's Meteorological Advisories (AIRMETs), Convective SIGMETs, or ZJX Weather Advisories in effect for the time and location of the accident.

The following information was from a written statement of the meteorologist on duty at the time of the accident at the Aviation Weather Center in Kansas City, Missouri. A Convective SIGMET for the Florida (FL) panhandle and southeastern Alabama (AL) was not issued at 1055 because "WST criteria as described in NWS Directive 10-811 (6.41) had not been met." In addition, the meteorologist stated that "I did not issue a Convective SIGMET Special during the next half hour for the FL panhandle and southeastern AL, because the convection remained isolated and did not meet Convective SIGMET Special criteria described in NWS Directive 10-811 (6.42).

According to an email from ZJX Weather Service Unit meteorologist on duty at the time of the accident, a Center Weather Advisory (CWA) for the activity in the area of the accident was not issued because the criteria for issuance of CWAs was not met. The meteorologist noted that the criteria is contained in NWS Directive 10-803. The meteorologist also noted that during the two hours before the accident, radar showed isolated rain shower activity in the area with no lightning indicated on the Weather and Radar Processor (WARP) display. According to the meteorologist the activity remained isolated and was not impacting ARTCC operations, therefore a CWA was not required. In addition, the meteorologist noted that because of the replacement of a defective WARP display monitor, he had no WARP meteorological data during the time of monitor replacement which coincided with the time of the accident. The WARP workstation was down from about 1100 to 1115. According to the meteorologist, "while WARP workstation was down, the availability of weather data for support to the ARTCC was degraded and display weather data when WARP is unavailable." However, the meteorologist noted that they do have access to weather radar data through NWS internet sites.

## RADAR AND COMMUNICATIONS

Tyndall RAPCON is a United States Air Force (USAF) approach facility, and is equipped with a TPX-42 radar system that does not record aircraft target or weather information. Radar data for this accident was obtained from the Tyndall AFB ARSR-4 long range radar site. This radar site is not used by Tyndall RAPCON for air traffic control purposes, but is used by both ZJX and USAF air defense controllers for surveillance.

According to recorded Display System Replacement (DSR) WARP NEXRAD display data, an area of moderate, severe, and extreme level weather was along the airplane's route, and was displayed on ZJX and Eglin AFB radar displays in digital form with intensity information available to controllers at both facilities. Tyndall AFB controllers showed the weather area; however, had no direct indication of precipitation intensity.

An ATC group was formed and conducted several interviews with air traffic personnel and controllers. The following are summaries of the interviews that the ATC group completed. For complete interview summaries, refer to the NTSB ATC Group Chairman's Factual Report.

### Crestview Radar Controller

On the day of the accident, the controller was working a 0900 to 1700 shift, and the accident

occurred on her first day back to work after three days off. The controller became aware of the airplane when the pilot checked on frequency northwest of CEW. At that time, the airplane was on top of the Pensacola North military operations area (MOA). After the airplane passed the MOA boundary, she cleared the pilot to descend to 15,000 feet and the pilot acknowledged. Shortly afterward, she cleared the airplane to descend to 11,000 feet and started a handoff to Tyndall RAPCON. RAPCON accepted the handoff and she instructed the pilot to contact Tyndall. The controller had no further contact with the pilot.

The controller stated that there was some weather in the Eglin AFB restricted area and some scattered weather in the area northwest of Tyndall AFB, about 20 miles southeast of DEFUN. At some point while handling the airplane, the controller requested a route display to see where the flight was going, but did not see any weather along the airplane's route.

After transferring the airplane to RAPCON, the controller continued working other aircraft. Approximately 12 minutes later, the RAPCON controller called back to ask about the accident airplane asking if she had seen or heard from the airplane. She replied that she had not and would start lost aircraft procedures. She again looked at the weather in the area, but observed nothing new.

When asked to describe her understanding of the NEXRAD system, she stated it displayed moderate, heavy, and extreme levels of weather and described the appearance of each on the display. There are 8 NEXRAD radars which provide information to ZJX. When asked whether any were out of service at the time, she stated that there were two radars out of service, but she did not know about that until after the accident. Controllers are not routinely informed when NEXRAD radars are up or down while they are working sectors.

#### Crestview Radar Assistant

On the day of the accident, the radar assistant was working a 0900 to 1700 shift, and the accident occurred on the third day of a five-day workweek. He first became aware of the airplane when it was handed off by Atlanta center. He checked the route for separation violations, restricted areas, and the need for point outs to other sectors. The route was "okay." The pilot contacted the radar controller at FL190. After resolving some traffic conflicts, the radar controller descended the airplane to 11,000 feet for landing at Panama City in accordance with the letter of agreement with Tyndall RAPCON. The airplane was routed over DEFUN. Tyndall took the handoff, the airplane left ZJX airspace, and the assistant dropped the data block from the display.

Shortly thereafter, Tyndall called back advising that they had lost contact with the airplane. The assistant stated the weather depicted on the display was, "...to the west of the aircraft, and didn't even look like it was in Tyndall's airspace. It was in Elgin's airspace along the boundary." He did not recall the intensity level of the weather he observed.

When asked about WARP/NEXRAD, the assistant started by saying, "I don't like it." NEXRAD displays three levels of intensity, which the assistant described as heavy, extreme, and severe. He was aware that the color cyan is the worst weather, but was unable to describe the appearance of the other two weather intensities.

#### West Area Operations Manager

The manager came to work on the afternoon of the accident, a few hours after the accident occurred, and spent 4 or 5 hours looking into the situation because he was the second-level

supervisor of the controllers involved. During that time, the manager reviewed replays, listened to the communications recording, and talked with the controllers. The day shift manager asked Tyndall if they provided any weather to the pilot and was told they had not. The manager reviewed the PDARS replay and observed the aircraft's track entering the depicted weather. He was concerned and wanted to know why the controllers missed that. The Central Weather Service Unit (CWSU) meteorologist advised the manager that both Tallahassee and North Florida NEXRAD weather radars were out of service at the time of the accident. These radars provide ZJX controllers with part of their weather coverage in the accident area. After finding out about the radar outages, the manager became concerned about what the controller might have been seeing or not seeing at the time of the accident. The CWSU provided pictures showing a fast-growing area of weather, but it may not necessarily have been on the controller's display. The manager conducted some research and found that there are 8 NEXRAD sites feeding ZJX. Operations managers are not always aware that NEXRAD radars are out of service, but the manager believed that this would be useful information.

#### Tyndall AFB North Approach Radar Controller

On the day of the accident, the controller was working a 1000 to 1800 shift. When arriving on shift, the controller receives initial weather information from the watch supervisor and also by reference to an AccuWeather display on the wall that loops through a weather radar picture received from the internet. The wall display provides a general overview of the weather over a wide area of Florida, but nothing specific to the Tyndall/Panama City area. On the day of the accident, weather at Panama City was visual flight rules (VFR), but there were thunderstorms in the vicinity. A radar assistant was helping the controller at the radar assist position, and the radar assistant is responsible for strip making, coordination, and radar handoff functions if necessary.

The controller became aware of the airplane when he accepted a handoff from ZJX. The flight strip indicated that the airplane was operating IFR to PFN. There was a precipitation area on the display covering about a 5 mile square area between DEFUN and REBBA intersections. The controller noted the route on the strip would take the airplane right through it. The pilot checked in without the current ATIS information, so the controller read it to the pilot. The pilot then asked for a lower altitude. The radar assistant gave a point out to Eglin, because the airplane was at 11,000 feet on top of their airspace and had not crossed Tyndall's lateral boundary. Eglin approved descent to 6,000 feet. The controller issued the descent, and the pilot acknowledged. The radar assistant had previously checked with Eglin to obtain information on the intensity of the weather between DEFUN and REBBA, because Elgin has a STARS system that provides better weather detail than Tyndall has. The Eglin controller reported that the weather depicted on his display ranged from intensity level 1 through 6, but did not provide specific information on which part of the precipitation return was which level.

After the airplane started descending to 6,000 feet, the controller started a handoff to the Panama sector of the RAPCON. The controller had no discussions with the Panama controllers about weather information, but he was not sure whether the radar assistant had coordinated anything. When the Panama sector took the handoff, the controller transferred communications with them, and he had no further contact with the pilot. Shortly after switching the airplane to Panama, the controller overheard the radar controller there attempting to advise the pilot that radar contact was lost.

When asked whether the controller provided a weather advisory to the pilot, the controller stated he did not. He stated that when the airplane called for descent, he assumed that the pilot knew about the weather as he said that he wanted to descend out of it. ZJX had weather radar information, and the controller thought they would have given the pilot the information before the handoff. However, he did not check with either the pilot or ZJX, or ask the radar assistant to do so, in order to confirm that any weather information had been provided. The pilot did not say anything about needing to deviate.

#### Tyndall AFB North Approach Radar Assistant

On the day of the accident, the assistant was working a 0700 to 1500 shift. She stated that there were no unusual circumstances in the RAPCON, and the equipment at the North Approach position was all functioning normally. She described the traffic as pretty slow, with one or two aircraft besides the accident airplane. There was weather depicted in the RAPCON's airspace near REBBA and north of Panama City. Aircraft started to deviate around the weather north of Panama City about 20 minutes after the accident occurred. The weather around REBBA looked like a cloud that extended about 6 miles in the north-south direction, and about 10 miles from east to west. When asked whether she had any impression about the intensity of the weather, she stated that Eglin had described the intensity as levels 1 through 6.

The assistant became aware of the accident airplane when she took the handoff from ZJX. The pilot requested a lower altitude, so she pointed out the airplane to Eglin North descending to 6,000 feet. She had previously asked Eglin for information about the weather over REBBA. She advised the controller of the information from Eglin. The controller and assistant made sure the pilot had the ATIS information for Panama City, informed him what approach to expect, and handed off the airplane to the Panama sector.

She had heard about a problem with the airplane when the Panama sector controller advised that they had talked to the pilot, cleared him to descend to 3,000 feet, and then lost radio and radar contact with the airplane. At that time, the North Approach controllers were dealing with MOA traffic that had to deviate around weather. The Panama controllers asked the North Approach controllers to check their frequency for the airplane, but the pilot did not respond to several calls.

When asked if the North Approach sector controllers were still watching the airplane when the airplane dropped off the display, she stated that the airplane went into the depicted precipitation, but did not come back out. The data tag was still on the airplane when it went into the weather area, then it disappeared. The airplane was coasting intermittently even before entering the weather area. She stated that she understood the pilot's descent request to be for the purpose of getting out of the weather. The controllers had a tops report of 12,000 feet, but no base reports.

#### Panama Sector Radar Assistant

When the airplane came on to their frequency, he did not have any idea if the pilot had been advised of the weather ahead. The airplane was still proceeding direct to PFN, descending to 6,000 feet. The radar controller issued a pilot discretion descent to 3,000 feet and the pilot acknowledged.

The assistant stated that Tyndall controllers do communicate with Eglin AFB to obtain weather information because Eglin has STARS, which provides a much better weather display, but he was not sure what it looked like.

When the Panama sector lost contact with the airplane, he advised Panama City tower of the problem and told the controllers to notify him if the airplane called.

#### Panama Sector Radar Controller

The controller stated that when he took the handoff, the airplane was already on the eastern edge of weather that was about 10 miles deep and extending into the Eglin restricted area. There was a break just east of the airplane, and other spotty areas of weather in the vicinity. When the pilot called, he issued a pilot's discretion descent to 3,000 feet. The pilot did not ask about weather or deviations. The airplane strip showed that the pilot had received the ATIS information, but there were no other notations about weather.

He first became aware of the airplane when he observed the airplane data block flashing at the sector during his position relief briefing and accepted the handoff. At that time, there was precipitation return of a circular shape in the northwest corner of the sector near BRUSE. He stated that the airplane probably clipped the eastern portion of it. He observed the airplane a little north of the weather, then noticed that the airplane's data tag disappeared followed by a loss of the primary target. He was not sure if the airplane was actually in the precipitation area at the time, but the airplane was near it. He transmitted that radar contact was lost and asked the pilot for a position report. There was no response. He attempted to reestablish radio contact with the pilot, but was unsuccessful. Initially, he thought the pilot had just gone off frequency on his own. The radar assistant asked the Eglin AFB controllers if they could see the airplane, but they had no target.

#### WRECKAGE AND IMPACT INFORMATION

The main wreckage came to rest near the edge of a swamp in tree covered and high grass terrain at 30 degrees 41.874 minutes north latitude and 86 degrees 02.180 minutes west longitude, at an elevation of 225 feet msl. The main wreckage consisted of the fuselage, right wing, right engine, and empennage, and came to rest on a measured magnetic heading of 280 degrees. Several fragmented pieces of the airplane were located within a 100-foot diameter of the main wreckage. No evidence of in-flight or post-impact fire was noted. The left wing with the left engine attached, and the left wing tip tank were located in a wooded area approximately 0.6 miles northwest of the main wreckage. The left wing was separated at the inboard side of the left engine nacelle.

At the accident site, structural engineers with the FAA examined the left wing and fracture surfaces. The left wing separated from the airplane inboard of the left engine and nacelle at Wing Station (WS) 1950. Examination of the fracture surfaces indicated that both the front and rear spars failed from "catastrophic static up-bending overstress at WS 1950." Both upper and lower wing skins were separated at WS 1950. A witness mark, consistent with the left wing leading edge de-ice boot, was located on the vertical stabilizer. The left tip tank was located approximately 450 feet from the left wing. The fracture surfaces of the tip tank main attach fittings exhibited static overstress failure. The front fitting displayed tensile overstress features, and the rear fitting displayed aft bending and tensile overstress features.

Examination of the main wreckage revealed the airplane impacted terrain on the left side, and the right wing was folded over the top of the fuselage. Tree cuts adjacent to the fuselage and slash marks on the fuselage were consistent with the right propeller assembly. The center wing section was fractured and a portion of the rear spar structure remained attached to the fuselage. Fracture surfaces of the wing front and rear spar caps exhibited "severe static

overstress failure." All four wing-to-fuselage main attach points "failed in static overstress." The inboard portion of the left wing between WS 1950 and the fuselage was destroyed. The front spar lower cap was found fractured into three sections. The fracture surfaces were consistent with "static severe overstress." Sections of the front spar upper cap and rear spar lower cap fractures were consistent with "severe static overstress." The right wing tip tank was located adjacent to the right wing.

Flight control continuity was established to the right wing and empennage flight control surfaces. Flight control cables on the left wing displayed features consistent with overload. Five of the six flap traveling nut positions corresponded with the flaps in the retracted position; the sixth flap actuator was not located. The landing gear traveling nut was found in the retracted position, and the three landing gears were found in the retracted position.

#### MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the District One Medical Examiner Office, Fort Walton Beach, Florida, on September 3, 2006. According to the autopsy, the cause of death for the pilot was generalized blunt force injuries.

Toxicological tests were performed by the FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma. The toxicological tests were negative for all screened substances.

#### TESTS AND RESEARCH

On November 1, 2006, at the facilities of Atlanta Air Salvage, Griffin, Georgia, the wreckage was examined by the NTSB IIC, and representatives of the airframe, engine, and propeller manufacturers. Examination of cockpit revealed the left power lever was in the flight idle position, and the right was 1 inch forward of flight idle. The left condition lever was 1/2 inch aft of minimum cruise, and the right was at minimum cruise. The IN-1102A radar indicator range selector was found in the 25 nautical mile position, the mode selector was found in the "Wx" position, and the tilt/stab control knob was found in the +10 degree (maximum 15 degrees) position. The altitude preselect indicator contained the digits 3000.

The engines were externally examined and not disassembled from the wreckage. The left engine, S/N P-20126C, 3rd stage turbine and 1st stage compressor impeller were both intact. The propeller and rotating group were not free to rotate. The right engine, S/N P-20122C, displayed signs of metal spray on the suction side (aft side) of the 3rd stage turbine blades. Reverse (opposite direction of rotation) bending was noted on the 1st stage compressor impeller vane leading edges.

Examination of the left propeller revealed the propeller remained attached to the engine. The spinner dome was dented on one side and displayed no frontal damage. Two blades were found at reverse pitch, and one blade was found at the low pitch position. The piston was at the reverse position. The piston, cylinder, and pitch change mechanism remained intact and all three link arms remained connected to their blades. The blade clamps and counterweights were intact and undamaged. One blade was bent aft approximately 20 degrees with a large radius bend. One blade was not bent and displayed minor damage on the leading and trailing edges approximately 2 to 4 inches from the blade tip. One blade was bent forward approximately 45 degrees with a large radius bend and displayed a large gouge from the trailing edge approximately 5 to 7 inches from the blade tip.

Examination of the right propeller revealed the propeller remained attached to the engine. The

spinner dome was crushed on the sides and displayed no frontal damage. The piston, cylinder, and link arm assembly had separated from the propeller, which disconnected all three blades. One blade was cut off near the hub during wreckage recovery operations. The blade clamp was found at the feather position. The blade displayed leading edge gouges and the outer 3 inches of the blade tip was separated. One blade was separated from the propeller and the blade clamp and hub pilot tube were fractured. The blade clamp was found at the feather position. The blade was bent aft approximately 45 degrees at mid-blade and twisted toward low pitch. The outer 5 inches of the blade tip was separated, and the blade leading edge displayed gouges. One blade was found at the low pitch position. The outer 1/2 of the blade displayed wavy bends and the blade tip was curled aft in excess of 90 degrees. The blade was twisted toward low pitch and displayed leading edge gouges and bends.

Performance plots for the accident flight were calculated by the NTSB. The calculations were based on smoothed air route surveillance radar data, airplane weight at the time of the accident, and winds aloft. The performance calculations indicated that the calibrated airspeed at the time of the last Mode C radar return was between 210 and 220 knots, and a descent rate of about 2,000 to 2,500 feet per minute.

#### ADDITIONAL INFORMATION

FAA Order 7110.65, "Air Traffic Control," paragraph 2-6-4, "Weather and Chaff Services," states in part:

- a. Issue pertinent information on observed/reported weather or chaff areas. Provide radar navigational guidance and/or approve deviations around weather or chaff areas when requested by pilot. Do not use the word "turbulence" in describing radar-derived weather.
  1. Issue weather and chaff information by defining the area of coverage in terms of azimuth (by referring to the 12-hour clock) and distance from the aircraft in terms of fixes or distance and direction from fixes.
  2. Issue the level of echo intensity when that information is available.
  3. When equipment limitations exist, controllers shall, at a minimum, ensure that the highest available level of echo intensity within their area of jurisdiction is displayed.
  4. When a deviation cannot be approved as requested and the situation permits, suggest an alternative course of action.
- b. In areas of significant weather, plan ahead and be prepared to suggest, upon pilot request, the use of alternative routes/altitudes.

NOTE - Weather significant to the safety of aircraft includes such conditions as tornadoes, lines of thunderstorms, embedded thunderstorms, large hail, wind shear, microbursts, moderate to extreme turbulence (including CAT), and light to severe icing.

Parties to the investigation included the FAA, Mitsubishi Heavy Industries America, Inc., Honeywell Engines, Systems and Services, and Hartzell Propeller, Inc.

The airplane wreckage was released to the owner's representative.

## Pilot Information

|                                  |   |  |                            |
|----------------------------------|---|--|----------------------------|
| <b>Certificate:</b>              | Airline Transport; Flight Instructor; Commercial                            | <b>Age:</b>                              | 64, Male                   |
| <b>Airplane Rating(s):</b>       | Multi-engine Land; Single-engine Land                                       | <b>Seat Occupied:</b>                    | Left                       |
| <b>Other Aircraft Rating(s):</b> | None  | <b>Restraint Used:</b>                   | Seatbelt, Shoulder harness |
| <b>Instrument Rating(s):</b>     | Airplane  | <b>Second Pilot Present:</b>             | No                         |
| <b>Instructor Rating(s):</b>     | Airplane Multi-engine; Instrument Airplane                                  | <b>Toxicology Performed:</b>             | Yes                        |
| <b>Medical Certification:</b>    | Class 2 With Waivers/Limitations  | <b>Last FAA Medical Exam:</b>            | 08/01/2006                 |
| <b>Occupational Pilot:</b>       |   | <b>Last Flight Review or Equivalent:</b> | 04/01/2006                 |
| <b>Flight Time:</b>              | 30780 hours (Total, all aircraft), 10000 hours (Total, this make and model) |  |                            |

## Aircraft and Owner/Operator Information

|                                      |                                |                                       |               |
|--------------------------------------|--------------------------------|---------------------------------------|---------------|
| <b>Aircraft Make:</b>                | Mitsubishi                     | <b>Registration:</b>                  | N6569L        |
| <b>Model/Series:</b>                 | MU-2B-35                       | <b>Aircraft Category:</b>             | Airplane      |
| <b>Year of Manufacture:</b>          |                                | <b>Amateur Built:</b>                 | No            |
| <b>Airworthiness Certificate:</b>    | Normal                         | <b>Serial Number:</b>                 | 645           |
| <b>Landing Gear Type:</b>            | Retractable - Tricycle         | <b>Seats:</b>                         | 8             |
| <b>Date/Type of Last Inspection:</b> | 01/01/2006, 100 Hour           | <b>Certified Max Gross Wt.:</b>       | 10775 lbs     |
| <b>Time Since Last Inspection:</b>   | 26 Hours                       | <b>Engines:</b>                       | 2 Turbo Prop  |
| <b>Airframe Total Time:</b>          | 6642 Hours at time of accident | <b>Engine Manufacturer:</b>           | Garrett       |
| <b>ELT:</b>                          | Installed, not activated       | <b>Engine Model/Series:</b>           | TPE331-6-252M |
| <b>Registered Owner:</b>             | Intercontinental Jet, Inc.     | <b>Rated Power:</b>                   | 665 hp        |
| <b>Operator:</b>                     | Berg Steel Pipe Corp.          | <b>Operating Certificate(s) Held:</b> | None          |

## Meteorological Information and Flight Plan

|                                  |                                  |                                      |                   |
|----------------------------------|----------------------------------|--------------------------------------|-------------------|
| Conditions at Accident Site:     | Instrument Conditions            | Condition of Light:                  | Day               |
| Observation Facility, Elevation: | CEW, 213 ft msl                  | Distance from Accident Site:         | 20 Nautical Miles |
| Observation Time:                | 1053 CDT                         | Direction from Accident Site:        | 270°              |
| Lowest Cloud Condition:          | Unknown                          | Visibility                           | 10 Miles          |
| Lowest Ceiling:                  | Broken / 6500 ft agl             | Visibility (RVR):                    |                   |
| Wind Speed/Gusts:                | Calm /                           | Turbulence Type Forecast/Actual:     | /                 |
| Wind Direction:                  |                                  | Turbulence Severity Forecast/Actual: | /                 |
| Altimeter Setting:               | 29.92 inches Hg                  | Temperature/Dew Point:               | 23° C / 20° C     |
| Precipitation and Obscuration:   | No Obscuration; No Precipitation |                                      |                   |
| Departure Point:                 | Tulsa, OK (TUL)                  | Type of Flight Plan Filed:           | IFR               |
| Destination:                     | Argyle, FL                       | Type of Clearance:                   | IFR               |
| Departure Time:                  | 0853 CDT                         | Type of Airspace:                    |                   |

## Wreckage and Impact Information

|                     |         |                      |                       |
|---------------------|---------|----------------------|-----------------------|
| Crew Injuries:      | 1 Fatal | Aircraft Damage:     | Destroyed             |
| Passenger Injuries: | N/A     | Aircraft Fire:       | None                  |
| Ground Injuries:    | N/A     | Aircraft Explosion:  | None                  |
| Total Injuries:     | 1 Fatal | Latitude, Longitude: | 30.685556, -86.033611 |

## Administrative Information

|                                   |  |              |            |
|-----------------------------------|--|--------------|------------|
| Investigator In Charge (IIC):     | Aaron M Sauer  | Report Date: | 07/25/2007 |
| Additional Participating Persons: | Jack E Clark; Federal Aviation Administration; Birmingham, AL<br>Marv Nuss; Federal Aviation Administration; Kansas City, MO<br>Ralph Sorrells; Mitsubishi Heavy Industries America, Inc.; Addison, TX<br>Jim Allen; Honeywell; Phoenix, AZ  |              |            |
| Publish Date:                     | 10/27/2015   |              |            |
| Note:                             | The NTSB traveled to the scene of this accident.   |              |            |
| Investigation Docket:             | NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> . |              |            |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).