Aviation Investigation Final Report

Location:	Key West, Florida	**Accident Number:**	MIA04FA119
Date & Time:	August 14, 2004, 14:51 Local	**Registration:**	N3800G
Aircraft:	Cessna U206B	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal, 4 Minor
Flight Conducted Under:	Part 91: General aviation		

Analysis

The airline transport certificated pilot was flying passengers and a cameraman associated with a film production to film a fort on an island. During the filming, the pilot stated he switched fuel tanks, and noted that the left tank was full, and the right tank about 3/4 full. As the airplane approached the fort, the engine sputtered, and then regained full power. A minute or two later, the pilot indicated the engine lost all power, and after unsuccessfully trying to restart it, he ditched the airplane. The pilot and passengers were all able to exit the airplane except the cameraman, who tied himself to the seat with a rope prior to takeoff after the cargo door had been removed to facilitate filming. Attempts to free the cameraman prior to the airplane sinking were unsuccessful, and he drowned. A passenger noted that the right fuel tank fuel gauge was somewhere around the 1/4 mark, and bouncing as the airplane flew. Postaccident inspection of the airplane, recovered 17 days later from ocean waters, disclosed no evidence of any preimpact mechanical malfunction.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power for an undetermined reason during cruise flight, which resulted in the pilot ditching the airplane in ocean waters.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: CRUISE

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: DITCHING
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
2. TERRAIN CONDITION - WATER
3. EVACUATION - NOT POSSIBLE - PASSENGER

Factual Information

HISTORY OF FLIGHT

On August 14, 2004, about 1445 eastern daylight time, a Cessna U206B, N3800G, registered to and operated by Paradise Aviation, Inc, as a Title 14 CFR Part 91 business flight to film areas of the Dry Tortugas, ditched into the water in the vicinity of Paradise Key, in the Dry Tortugas National Park, Florida. Visual meteorological conditions prevailed, and no flight plan was filed. The airline transport-rated pilot and three paying passengers, the film producer, film director, and assistant cameraman received minor injuries. One passenger, the cameraman, received fatal injuries. The airplane incurred substantial damage. The flight originated in Marathon, Florida, the same day, about 1230.

The pilot stated that the purpose of the flight was to transport persons to obtain movie footage of the islands in the Key West area. He further stated that he departed the Marathon airport with 4 passengers, and 20 minutes prior to the accident, while in cruise flight, he switched fuel tank in use from the right tank, to the left. At that time, he said that the fuel gauge showed the fuel quantity to be about 3/4 full in the right tank and full in the left tank. As he approached the Dry Tortugas Islands, he said that the engine sputtered, and then it regained full power. One to two minutes later, he said he noticed a strong smell of fuel or partially burned fuel in the cockpit, and seconds later the engine ceased operating. He said he was not able to restart the engine, so he established a glide and made a smooth water landing. The airplane began to sink and while helping to evacuate one passenger the pilot said he noticed that another passenger, the cameraman, was in his seat and was unharmed, but had failed to evacuate. He said he attempted to evacuate the passenger but was unsuccessful. He said he dove twice underwater, in an attempt to assist, but he was unsuccessful in freeing the passenger from the submerging airplane, adding that he believed that the passenger was entangled in the camera harness. The pilot further stated that he later learned from statements made by two of the surviving passengers, that the cameraman had tied himself with a rope to the seat and camera.

The film producer, who was seated in the front seat next to the pilot, stated that the takeoff was uneventful, and she had taken medicine to assist her in making the flight, and was only awake for about the first 10 minutes during the flight. She said that she awakened as the airplane approached the Dry Tortugas, and after having taken a couple of pictures of the "Fort" through the window with her personal camera, the engine ceased operating. She further stated that she asked the pilot twice what was wrong, and the next thing she knew they were in the water.

The film director stated that he was seated in the back of the airplane behind the pilot and the assistant cameraman. He said he met the pilot about a month earlier when he had been

"scouting" for the movie, and that the pilot had told him that he was a pilot for a major airline. According to the director, he later stayed at the pilot's hotel and got to know the pilot, and had told the pilot that he wished to perform aerial photography of the Dry Tortugas. He said that he arranged for the pilot to fly his film crew and that the pilot asked that he be reimbursed $139 per hour for the cost of the airplane. The film director said he met both the pilot and owner of the airplane at the appointed time, and while preparing the airplane, the cameraman asked for the door to be taken off, and a cotton rope tied across his legs, as well as to the camera, so it would not fall from the airplane. He also stated that both the pilot and owner/operator of the airplane had been aware that the cameraman had been tied to a rope while seated in the airplane, and he had taken pictures of how the cameraman was tied to the airplane while on the ground before the engine was started. According to the film director, the initial part of the flight was uneventful. They flew to Key West, the Marquises Islands, and then on to Fort Jefferson. He said they flew around Fort Jefferson at about 500 feet, and on the second pass the engine sputtered and ceased operating. The engine restarted about 30 seconds later, operated for about 3 or 4 minutes, and then ceased operating. He said as the airplane glided, he thought the engine would restart but the pilot could not get it to operate, and the airplane impacted the water and sank.

The assistant cameraman, seated directly behind the pilot, stated that he arrived at the airport about 1245, prepared the camera, and coordinated with the cameraman. He further stated that the cameraman asked to have a rope tied around his waist and to the seat, even though there was a seatbelt available. After preparations had been made for the flight, he said they got to the end of the runway, the pilot completed items to check the airplane, and they took off about 1335. He said the takeoff and initial portion of the flight were normal, and from his position seated behind the pilot, the cameraman was seated next to him with the camera in his lap. As the flight proceeded they flew over the "Gulf side" of U.S. 1. crossed over to the "Atlantic" side to film an island, and then on to the Dry Tortugas. He said that while reaching for a canister of film he heard a strange sound, and saw the pilot reach for the power quadrant and push and pulled a red or orange lever, and then the engine operation seemed to operate normal again. During the flight he said he could only see the fuel gauges because the pilots body was blocking the other gauges from his view, and he noted that the right gauge's needle was rocking back and forth corresponding with the airplane's movement, from about a quarter tank to a half tank. He said that the left tank did not fluctuate but the needle indicated that it was full of fuel the whole time. Several minutes later he said he heard a sound similar to what he had heard earlier, just like the engine was "dying." He said it had been less than 5 minutes, since the previous engine sound and they had been flying around the island and was back in about the same position as when the engine had sounded strange the first time. The assistant cameraman further stated that when the engine ceased operating, the pilot pushed and pulled the same lever he had manipulated earlier, but was unable to restart the engine. He said that they soon impacted the water and everything came forward and there was a rush of water into the airplane. He unfastened his seatbelt, took a gulp of air, and was soon outside the airplane, and further stated that the cameraman said, "the rope", and he answered "cool dude, I got it", but the rope was ripped from his hand as the airplane submerged. He said he tried to dive to reach the rope and free the cameraman, but he could not reach it.

All three surviving passengers said that the pilot never briefed them during the emergency. They further stated that after the airplane impacted the water, it filled, and sank rapidly with the cameraman still tied to his seat by a rope.

The owner/operator of Paradise Aviation Inc., under which the accident airplane was registered, stated that the pilot had telephoned her requesting an aircraft to use for a photographic flight in the Key West area. She further stated that on the morning of the accident flight, the pilot arrived at the appointed time, presented copies of his identification, pilot's license, medical certificate, and airline identification. According to the owner/operator, based upon her qualifications and function as a flight instructor, she and the accident pilot conducting a preflight examination of the airplane, boarded the airplane, and flew together during which she gave the pilot an airplane checkout. She said that the accident pilot performed the checkout successfully and upon returning and securing the airplane, they completed the paperwork, and the pilot introduced her to the director of the film, that the pilot was then was about to fly in support of. She said that the remainder of the film crew arrived and she went to the airplane to see if her assistance was needed. While at the airplane she said she showed everyone the location of the floatation devices. According to the owner/operator, the next thing she knew about the flight was when she was contacted by the pilot's wife informing her of the accident. The owner/operator also stated that the next day she saw the pilot and he said that the engine sputtered, then "caught", and then the engine ceased operating altogether. The owner/operator said that she then asked the pilot if he had switched fuel tanks, and that the pilot said "yes, he had just done that."

Radar data derived from the Navy Key West ARSR-4 radar, showed that at 1400:01, the airplane was about 22 nautical miles west of Marathon, Florida, and the airplane's Mode C transponder indicated an altitude of about 600 feet. Radar data showed the progress of the flight, with altitudes varying from 600 to 700 feet. All radar returns ceased at 1431:55, when the airplane was about 22NM east of the Dry Tortugas Islands, and there was no further data available for the remainder of the flight.

PERSONNEL INFORMATION

Information obtained from the FAA showed that the pilot held an airline transport pilot certificate with a multi-engine land rating, as well as ratings for the ND-262, SF-340, B-757, B-767. He also held a commercial pilot certificate with airplane single engine land and rotorcraft-helicopter ratings. The records also indicated that the pilot held a ground instructor and a flight engineer certificate. The pilot stated that he completed his last flight review on February 9, 2004.

He also held an FAA first class medical certificate, issued on June 29, 2004, with the stated limitation that the holder must wear corrective lenses while exercising his airman certificate privileges.

The pilot's flight logbook was not made available to the NTSB, however, the pilot reported that he had accumulated about 10,000 total flight hours, of which about 150 flight hours were in the same make and model as the accident airplane.

AIRCRAFT INFORMATION

N3800G was a 1967 Cessna U206A, serial number U206-0800. The airplane was equipped with a 285-horsepower, Continental IO-520-F reciprocating engine whose serial number was 291404R. It was also equipped with a two-bladed, constant speed McCauley propeller, serial number 731340.

The airplanes maintenance records were not made available to the NTSB, and upon the NTSB's visit and interviews with the owner/operator/flight instructor, as well as the mechanic who regularly serviced the airplane, absolutely no records were made available for examination, and the owner and mechanic provided no information of substance. The owner/operator stated that she had placed the airplanes records in an envelope and had maintained said records aboard the airplane, because she had intended to visit JVAir Maintenance at Kendall-Tamiami Airport, in about a week, in order to determine what would be required to place the airplane on a Part 135 certificate for cargo operations.

All airplane-related, as well as passenger and pilot personal items, to include personal documentation and papers were recovered from the airplane during the initial response or recovery efforts. The only items missing were the airplane records, which both the airplane owner/operator and the mechanic stated had been aboard.

In the absence of the availability of any maintenance information from the owner/operator and the mechanic who regularly maintained the airplane, two persons familiar with the airplane, provided information to the FAA, which alluded to there being maintenance issues with the airplane, to include an inoperative or intermittent high pressure fuel pump.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. The Key West International Airport, Key West, Florida, 1453, surface weather observation was winds from 170 degrees at 5 knots, visibility 10 statute miles, few clouds at 2,300 feet, temperature 31 degrees Celsius, and the dew point temperature 25 degrees Celsius. The altimeter setting was 30.03 inHg. Key West, Florida, is about 70 nautical miles east of the accident site.

WRECKAGE AND IMPACT INFORMATION

The accident airplane sank in the ocean after ditching and was recovered 17 days later from a depth of 36 feet, in position 24 degrees 37 minutes North latitude, 082 degrees 53 minutes West longitude. Upon recovery, the airplane was initially examined on the deck of the recovery barge and further examined the following day after the barge had been towed and had docked

ashore.

Examination of the airplane revealed no damage to the airplane's cabin. Both wings had remained attached to the fuselage, and they displayed some leading edge impact damage. In addition, the top vertical fin cap had been damaged. The seat restraint systems were intact, and the seats were not damaged and had remained on their seat rails. Seat belts were present on all of the seats. The left cockpit door was unlocked and the latch was functional. The windshield had separated from the fuselage. The top engine cowling fasteners had pulled loose from the left side, but remained attached on the right side. The main landing gear showed no apparent damage, however the nose gear had remained attached, but was bent toward the rear of the airplane. The flap actuators measured about 3.5 inches, which equated to the flaps being deployed about 20 degrees, all flight controls had remained attached to the respective control surfaces, and flight control continuity was established for all flight controls.

In the cockpit, the engine control settings and gauge readings included the throttle, mixture, and propeller controls which were found to be positioned full-in, and the fuel selector which was on the left position. Both the high and low boost pump switches as well as alternator switch were in the "on" position, and the magneto switch was on the "both" magneto position. The airspeed indicator read approximately 148 knots, and the altimeter read approximately 1,680 feet, with a barometric pressure setting of 30.04 inHg. The heading indicator read 052 degrees, the vertical speed indicator read approximately 2,000 feet per minute, and the Nav. No. 1 OBS read 272. The manifold pressure and cylinder head temperature were at the upper limit, and the oil pressure and oil temperature read zero. The Hobbs meter indicated 1793.2 hours, and the tachometer indicated 587.6,hours. The transponder had been set to 1200.

The engine had remained attached to the engine mount and to the airframe. When initially recovered from the ocean the crankshaft was rotated and there was apparent drive train continuity. After attempting to preserve the engine with diesel fuel, the engine was recovered ashore, removed from the airframe, and taken to Certified Engines Inc., where it was disassembled and examined. No anomalies were noted with the engine upon its disassembly.

The exterior of the engine displayed heavy corrosion. The induction system and the exhaust system exhibited no damage. Crankshaft, camshaft, and valve train continuity was established to the gears in the accessory case, and suction and compression was noted at each cylinder during rotation. The nut on the number five cylinder base through bolt at the 7 o'clock position was found to be split. The number one cylinder base through bolt at the 11 o'clock position was also found split.

On the ignition system the harness had been undamaged except for being cut on the process of removing the magnetos. Both magnetos exhibited heavy corrosion, however they sparked on all terminals when tested. In addition the spark plugs displayed normal wear when compared with the Champion aviation check A card, they had corrosion and rust in the areas of the electrodes.

The propeller and propeller governor revealed no evidence of pre-impact failure or malfunction. The propeller had remained attached to the crankshaft flange, and the propeller hub and the spinner were not damaged. Two propeller blades could not be rotated, and were shown to be near the low pitch stop. The third propeller blade could be rotated from the low to the high pitch stops. All three propeller blades were slightly bent aft. The exterior of the propeller governor was undamaged and corroded. The propeller governor arm was in the full aft position.

The vented fuel caps were secure on each filler port. The fuel tanks were not damaged, both tanks contained a liquid that exhibited characteristics consistent with fuel and water, and 15.5 gallons of the liquid were removed from the left tank. Nineteen gallons of the liquid were removed from the right tank. There was also blue-colored fuel liquid consistent with fuel present in the fuel line from the fuel pump to the fuel manifold valve.

The engine dipstick displayed that oil was present, and when examined the oil sump contained both oil and water. The relief valve was clean with no obstructions. The oil cooler was corroded externally. The oil filter was opened and the element was clean with no metal particles found. The left and right exhaust and induction tubing, oil sump, alternator, starter, and magnetos were not damaged and had remained intact. The induction and exhaust systems were not damaged.

The fuel line and fuel selector valve continuity were confirmed, and the fuel gascolator was free of obstructions. In addition, the fuel selector was disassembled and no anomalies were noted. The electric fuel boost pump operated and pumped liquid when tested using a 12-volt battery. Examination of the fuel metering unit controls displayed that the throttle lever was near the full open position, and the mixture lever was near the full rich position. No fuel was present in the main fuel supply line or the main fuel return line. In addition, no damage was evident to the injector lines.

The engine driven fuel pump, fuel metering unit, fuel manifold valve, lines and nozzles were removed for further examination.

A detailed examination of the engine driven fuel pump, throttle and metering assembly, fuel manifold valve, and lines and nozzles were performed at Teledyne Continental Motors, Mobile, Alabama, under FAA supervision, and no anomalies were noted. Damage noted to the units was consistent with their exposure to a corrosive environment. The fuel injection system components were bench tested, and the engine driven fuel pump was mounted for the flow test. The pump produced pressure, however, based on the flow values noted, the unit was then disassembled for further examination. The examination revealed that the pump drive gear, coupling, and shaft all to be intact. During the examination, the rear cover was removed the diaphragm, low pressure relief valve, low pressure adjustment screw and rings were found intact and properly positioned. The diaphragm was also intact with no signs of leakage being noted. The low pressure relief valve had free movement on its housing pin. The valve face pump, housing O-ring seal, end plates, pump vanes, pump shaft pump vane liner and ball check

valve and spring were all intact and undamaged. The pump vanes were intact, undamaged and exhibited normal wear. The fuel screen was clean and clear.

The fuel control was removed from the throttle body and examined. The fuel control inlet finger screen was found to be improperly safetied, and when the screen was examined it was found to be restricted about 20 percent. The metering shaft, mixture shaft, and O-ring seals and metering plug were all intact. The fuel manifold valve was examined and the diaphragm and plunger assembly were intact. In addition the needle and valve spring were intact and functional, and the screen was free of debris. The plunger seal was intact and had some corrosion on its steel structure. Fuel injector nozzles Nos. 1, 2, 3 and 4 were restricted, and exhibited limited to no fuel flow during testing, and flow values were consistent with debris found in the restricted nozzles. The remaining nozzles had corrosion in their interiors, but they had no external damage. Debris found in the units were was analyzed under FAA supervision at TCM Metallurgical Laboratory, and found to metallic and non metallic oxides as well as mineral deposits, and the flow rates noted were consistent with the debris found.

MEDICAL AND PATHOLOGICAL INFORMATION

A medical examiner with the District 16 Medical Examiner's Office performed an autopsy of the deceased cameraman on August 16, 2004. According to the Medical Examiner, the cause of death was attributed to drowning due to saltwater submersion.

Postmortem toxicology testing on specimens obtained from the cameraman was performed by the University of Florida Diagnostic Referral Laboratory, Gainesville, Florida. Tests were conducted for volatiles and drugs, and none were found to be present.

TEST AND RESEARCH

Film media had been recovered from the airplane wreckage, and when examined in the NTSB Laboratory, Washington D.C, no data pertinent to the investigation was noted. The film media was returned to the film director.

ADDITIONAL INFORMATION
On April 28, 2006, the NTSB released the wreckage and all components pertaining to N3800G to Mr. Steve Smalley, President of Air and Sea Recovery.

Pilot Information

Certificate:	Airline transport; Commercial; Flight engineer	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	February 1, 2004
Flight Time:	10000 hours (Total, all aircraft), 150 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N3800G
Model/Series:	U206B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U206-0800
Landing Gear Type:	Tricycle	**Seats:**	5
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	1793.2 Hrs at time of accident	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed	**Engine Model/Series:**	IO-520-F
Registered Owner:	Carol Collins	**Rated Power:**	285 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	Paradise Aviation Inc.,	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	EYW,3 ft msl	**Distance from Accident Site:**	61 Nautical Miles
Observation Time:	14:53 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Few / 2300 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	31°C / 25°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Marathon, FL (MTH)	**Type of Flight Plan Filed:**	None
Destination:	Key West, FL (EYW)	**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal, 3 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 4 Minor	**Latitude, Longitude:**	24.621665,-82.883888

Administrative Information

Investigator In Charge (IIC):	Lovell, John
Additional Participating Persons:	Edward I Levy; FAA FSDO; Miami, FL Tom L Moody; Cessna Aircraft Company; Witchita, KS John T Kent; Teledyne Continental Motors, Inc.; Mobile, AL
Original Publish Date:	May 29, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59923