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ACN: 952218 *(1 of 1)*

Time / Day

Date : 201106
Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : PCT.TRACON
State Reference : VA
Altitude.MSL.Single Value : 10000

Environment

Flight Conditions : Mixed
Weather Elements / Visibility : Turbulence
Weather Elements / Visibility.Visibility : 10
Light : Night
Ceiling.Single Value : 250

Aircraft

Reference : X
ATC / Advisory.TRACON : PCT
Aircraft Operator : Personal
Make Model Name : M-20 K (231) / Encore
Crew Size.Number Of Crew : 1
Operating Under FAR Part : Part 91
Flight Plan : IFR
Mission : Personal
Flight Phase : Cruise
Route In Use.Airway : V16
Airspace.Class E : PCT

Person

Reference : 1
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Private
Experience.Flight Crew.Total : 490
Experience.Flight Crew.Last 90 Days : 28
Experience.Flight Crew.Type : 75
ASRS Report Number.Accession Number : 952218
Human Factors : Human-Machine Interface

Events

Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Regained Aircraft Control
Result.Aircraft : Aircraft Damaged

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Ambiguous

Narrative: 1

The weather conditions were primarily VMC, smooth air, with reduced forward visibility due to haze. No SIGMETs or AIRMETs were active at the time of the encounter with severe turbulence. Thunderstorms had moved through the area several hours before but were now well to the east along the Atlantic coast. It was a very dark, moonless night. XM weather on board indicated no precipitation, lightning, or storm cell activity along or near my route of flight, nor was any lightning detected by the onboard lightning detector. VFR conditions existed at all airports along the route of flight. This was all consistent with the weather briefing I received (computerized through DUATS) for the area. Shortly after crossing the PXT VOR southbound on V16 at 10,000 FT, I entered IMC conditions and immediately encountered severe turbulence at 10,000 FT MSL with the autopilot engaged. I disconnected the autopilot and reduced the power to establish maneuvering speed (V_a 119 KTS).

A severe downdraft followed by severe updraft, concurrent with severe turbulence, caused loss of control and a possible inadvertent spin in IMC. I applied full opposite rudder to the rotation of the turn and as I exited the base of the cloud I was in a nose down, level wing attitude with excessive airspeed [and] the power at idle. Unsure of my exact altitude above the ground and with a high rate of descent, I applied a significant amount of back pressure on the yoke to level off and don't know if I exceeded V_{ne} or the G limits for the airplane. When I finally leveled off, I was at 3,000 FT MSL. I was in contact with ATC throughout the event and indicated I was unable to maintain altitude. I was subsequently given clearance for a lower altitude. Back under control, I continued with vectors from ATC to the destination airport for a VFR landing. ATC asked if I requested services on the ground for any airframe issues and I declined. After the event, I also queried ATC as to whether they had any indications of severe weather. They said there was no indication of any precipitation, nor reports of severe weather in or near our area. On final approach, I attempted to lower the landing gear. This was unsuccessful, so I cycled the switch again. Again, the gear did not lower. I checked the circuit breaker and found that it was not set. I reset the breaker and the gear lowered and locked with normal gear safe indications. A normal landing followed.

Upon preliminary pilot inspection on the ground, the following damage to the airframe was noted. It is unknown if the damage occurred from the excessive turbulence or the potential G-forces while recovering from the rapid altitude loss. Main landing gear doors bent and one door bracket broken. [There was] evidence of buckling in the wing skins on both wings [and] buckling in the top engine cowling. Cabin door and baggage door misalignment or buckling [and there was] some distortion along the pilot side of the fuselage between the front and rear seats. While difficult given the dark conditions, being aware in advance of the cloud that caused the turbulence would have permitted avoidance of the cloud or allowed this pilot to better prepare for the encounter. In retrospect, I likely over-controlled the aircraft, which could have contributed to the inadvertent spin. The time to experience a spin for the first time should not be in IMC at night. Fortunately, my training was sufficient to recognize and correct for the problem and the Mooney airframe was strong enough to withstand the severe turbulence and potential G-forces needed for recovery. I will seek out spin training to further [hone] my skills.

Synopsis

An M20K pilot reported encountering clouds and severe turbulence that resulted in a loss of control and subsequent damage to the aircraft possibly caused by the high g-load pullout. Reporter mentioned his onboard XM weather gave no indication of weather on his route.

