



Aviation Investigation Factual Report

Location:	St. Petersburg, Florida	Incident Number:	ERA111A110
Date & Time:	January 5, 2011, 21:45 Local	Registration:	N7828V
Aircraft:	Mooney M20E	Aircraft Damage:	None
Defining Event:	Flight control sys malf/fail	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

On January 5, 2011, about 2145 eastern standard time, a Mooney M20E, N7828V, experienced jammed flight controls while on an instrument approach to St. Petersburg-Clearwater International Airport (PIE), Clearwater, Florida. The certificated commercial pilot, who was not injured, subsequently landed the airplane without damage. Night visual meteorological conditions prevailed, and the flight was operating on an instrument flight rules flight plan from Baytown Airport (HPY), Baytown, Texas. The personal flight was conducted under the provisions of 14 Code of Federal Regulations (CFR) Part 91.

According to the pilot, he was beyond the final approach fix on the ILS (instrument landing system) runway 17 approach, had contacted the tower, and had the airport in sight. He began to configure the airplane for landing, "added" flaps, enriched the mixture, turned on the boost pump, and attempted to extend the landing gear manually via the Johnson bar.

The pilot unlocked the Johnson bar from the floor and brought it forward to the instrument panel. He encountered resistance 3 to 4 inches from the panel and was unable to move the bar any further forward. He then retracted the Johnson bar, and checked the area around it for anything that may have been preventing its full movement forward. The pilot then "moved" the carpet and attempted to lower the landing gear again with no luck. He tried a third time before calling the control tower and reporting that he had a landing gear problem.

After the pilot's call, the tower controller advised him that he could return to the approach controller or stay in the pattern. He also offered to inspect the landing gear to confirm if it was down. The pilot opted to stay in the pattern and declined the offer to inspect the landing gear since he knew that none of the three wheels were down and locked "due to the nature of the manual extension gear." As he continued to follow the localizer and glideslope for a low approach to the runway, the pilot was issued instructions to stay in the pattern and make right traffic.

About 1/4 mile from the runway threshold, the pilot tried to force the landing gear down by applying more pressure to the Johnson bar. There was no emergency checklist, and the pilot felt that if it did not work, he would land gear up after a "lap" in the pattern. As he applied greater force to the Johnson bar, it clicked into the panel.

As the Johnson bar clicked into the panel, the airplane "immediately" banked to the left. The pilot rapidly turned the yoke to the right, but "was met [by] complete resistance and was unable to move the yoke to the right." The airplane continued to roll to the left and entered a descent. The pilot declared an emergency and was cleared to land on any runway. The airplane continued to roll and was, "at one point close to 60 degrees bank." The pilot retracted the landing gear, "thinking it would reverse the situation," but it did not. The pilot then "cleaned the

airplane up by putting the flaps up and reducing the power," and added full right rudder. He was able to roll the airplane to "about 15-20 degrees" of left bank, which stopped the turn and put the airplane into a left slip.

After completing about 315 degrees of a 360-degree turn, the pilot looked to his left and saw that he was about to be lined up with the runway. He called the tower controller once again and said he was landing, but wasn't sure the landing gear was locked down. With a right crosswind and left slip, the airplane touched down "well left of centerline," but on the runway. The pilot then brought the airplane to a stop while remaining on the runway.

A subsequent examination of the airplane revealed no damage. However, a photograph provided by the maintenance facility revealed that a small flashlight, about 5 ½ inches in length, was jammed, with the head of the flashlight against the aft side of the aft nose wheel well bulkhead, and adjacent to the aileron control linkage. The tail of the flashlight was jammed against the landing gear bellcrank. The owner of the flashlight could not be determined.

Maintenance personnel also found that when the Johnson bar was raised, a 3- to 4-inch hole could be seen in the boot that covered the area where the Johnson bar mechanism went through the deck. In a photograph of the boot, it appeared to be old, worn, and torn at the seams.

The airplane's owner reported that it had been "rebuilt" between 2004 and 2006, that he used it during flight training, and that he purchased it in July 2009. According to the airplane's aircraft logbook, the latest annual inspection was completed on April 12, 2010, with the airplane "determined to be in an airworthy condition."

Federal Air Regulation (FAR) 91.7 states that "no person may operate a civil aircraft unless it is in an airworthy condition," while FAR 91.403 states that the owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition."

According to FAA Order 8130.2F, "Airworthiness Certification of Aircraft and Related Products," the term "airworthy" is not defined in United States Code or in 14 CFR, "however, a clear understanding of its meaning is essential for use in the agency's airworthiness certification program, [and]...a review of case law relating to airworthiness reveals two conditions that must be met for an aircraft to be considered 'airworthy.'"

a. The aircraft must conform to its TC [type certificate]. Conformity to type design is considered attained when the aircraft configuration and the components installed are consistent with the drawings, specifications, and other data that are part of the TC, which includes any supplemental type certificate (STC) and field approved alterations incorporated into the aircraft.

b. The aircraft must be in a condition for safe operation. This refers to the condition of the

aircraft relative to wear and deterioration, for example, skin corrosion, window delamination/crazing, fluid leaks, and tire wear."

The "Best Practices Guide for Maintaining Aging General Aviation Airplanes" was published in September 2003 and endorsed by numerous aviation advocacy groups as well as the FAA. The Guide's stated purpose is to "provide owners of aging single-engine airplanes guidance about maintaining the airworthiness of their airplanes." In noting that it was only a starting point for owners, it provides best practices and a checklist of areas critical to airworthiness, but also notes that the checklist is not all-inclusive or mandatory. The checklist itself did not mention the condition of interior furnishings, covers, boots, that through their deterioration, could allow interference with flight controls.

FAA Advisory Circular AC 20-106, Aircraft Inspection for the General Aviation Aircraft Owner, dated April 1978, also contains a non-mandatory checklist that includes cockpit cleanliness and loose articles, and the condition of door linings, but does not mention the condition of interior furnishings, covers and boots that could, through their deterioration, allow interference with flight controls.

On February 28, 2011, Mooney Airplane Company, Inc. issued Service Instruction M20-118, which based on the incident, re-emphasized the importance of inspecting all interior boots and covers to preclude objects or debris interfering with flight controls.

Pilot Information

Certificate:	Commercial	Age:	22, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	October 19, 2009
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	December 12, 2009
Flight Time:	890 hours (Total, all aircraft), 90 hours (Total, this make and model), 760 hours (Pilot In Command, all aircraft), 290 hours (Last 90 days, all aircraft), 120 hours (Last 30 days, all aircraft), 8 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	Registration:	N7828V
Model/Series:	M20E	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	450
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	April 12, 2010 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:	185 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3980 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	IO-360 SER
Registered Owner:	On file	Rated Power:	180 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	PIE, 11 ft msl	Distance from Accident Site:	
Observation Time:	21:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 600 ft AGL	Visibility	8 miles
Lowest Ceiling:	Broken / 7500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	10 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.89 inches Hg	Temperature/Dew Point:	18°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Baytown, TX (HPY)	Type of Flight Plan Filed:	IFR
Destination:	St. Petersburg, FL (PIE)	Type of Clearance:	IFR
Departure Time:	16:15 Local	Type of Airspace:	

Airport Information

Airport:	St. Petersburg-Clearwater PIE	Runway Surface Type:	Asphalt
Airport Elevation:	11 ft msl	Runway Surface Condition:	Dry
Runway Used:	17	IFR Approach:	ILS
Runway Length/Width:	9730 ft / 150 ft	VFR Approach/Landing:	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	None
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	27.909999,-82.6875(est)

Administrative Information

Investigator In Charge (IIC): Cox, Paul

Additional Participating Persons: Michael Singleton; FAA/FSDO; Tampa, FL

Report Date: December 14, 2011

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=78145>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).