



Aviation Investigation Final Report

Location:	Summerland Key, Florida	Accident Number:	ERA20LA089
Date & Time:	January 25, 2020, 15:35 Local	Registration:	N41VK
Aircraft:	Beech A36	Aircraft Damage:	Substantial
Defining Event:	Runway excursion	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he performed preflight inspection and run-up checks before takeoff, which included a check of the elevator flight control system with no discrepancies noted. During the takeoff roll, the pilot reported the airplane was "nosing down to the front." He twice adjusted the elevator trim toward the airplane nose-up direction then applied aft input on the control yoke to rotate at 85 knots but felt resistance and aborted the takeoff. The airplane exited the runway, and the right wing impacted trees. The airplane's right wing was substantially damaged during the runway excursion.

Shortly after the accident, the pilot reported to the airport manager that he could not get airborne because of "...the control lock or something." The airport manager reported seeing the flight control gust lock on the right wing (and that it was not stored in a container behind the airplane's rear seats as reported by the pilot). Postaccident examination of the elevator primary flight control system revealed no evidence of preimpact failure or malfunction that would have precluded normal operation. Additionally, comparison of a postaccident photograph of the elevator position with the gust lock installed with the elevator position observed in a video of the accident takeoff roll indicated similar elevator positions: trailing edge down (airplane nose down), which was consistent with the pilot reported nose-down condition during the takeoff roll. Given this information, it is likely that the pilot had not removed the gust lock prior to initiating the takeoff, which resulted in his inability to rotate the airplane.

A postaccident photograph of the gust lock also showed that it was missing a portion designed to cover the engine controls and prevent engine start with the lock installed. Although the airframe manufacturer had previously published a service bulletin pertaining to the gust lock, it was for a different reason and did not require an inspection to make sure a proper and complete device was available. Had the gust control lock been complete, it would have blocked the engine controls and provided the intended warning.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to remove the flight control gust lock before takeoff, which resulted in an inability to rotate, aborted takeoff, and subsequent runway overrun. Contributing to the accident was a missing piece of the flight control gust lock, which did not give the pilot the intended warning that the gust lock was engaged.

Findings	
Aircraft	Gust lock or damper - Incorrect use/operation
Personnel issues	Forgotten action/omission - Pilot
Aircraft	Gust lock or damper - Damaged/degraded

Factual Information

History of Flight	
Prior to flight	Preflight or dispatch event
Takeoff-rejected takeoff	Runway excursion (Defining event)
Takeoff-rejected takeoff	Collision with terr/obj (non-CFIT)

On January 25, 2020, about 1535 eastern standard time, a Beech A36, N41VK, was substantially damaged when it was involved in an accident near Summerland Key, Florida. The private pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot stated that the airplane was equipped with a gust control lock to secure the flight controls, but he did not use it and kept it in a plastic tub that was secured in the airplane behind the rear seats. He performed a preflight inspection of the exterior of the airplane, which included a check of the elevator flight control for freedom of movement. He then boarded the airplane. The airplane was equipped with a dual control yoke; a mount for a tablet computer was attached between the control yokes and was forward of the gust control lock installation location. He stated that, as part of the run-up checklist, he verified full travel of the elevator and aileron flight controls. The pilot stated that, although he normally flew with a tablet temporarily attached to the control between the control yokes, it was on the co-pilot's seat during the accident flight.

The pilot further stated that he taxied into position of the runway, applied full throttle while holding the brakes, then released the brakes and began the takeoff roll. While accelerating, he noticed the airplane was nosing down, and he twice "bumped" the elevator trim towards the nose-up direction. At 85 knots, he pulled aft on the control yoke but felt "resistance" from the elevator that he later reported did not feel right. He aborted the takeoff at 95 knots by reducing throttle and applying the brakes. Approaching the end of the runway with a canal ahead, he applied hard left rudder. The right wing clipped mangroves, and the airplane came to rest shortly thereafter. He further stated that he did not attempt to access the plastic tub that contained the gust control lock for at least 1 hour after the accident.

The airport manager reported that he arrived on scene within about 3 to 5 minutes after the accident and that the pilot was still in the airplane, though he was in the right seat. He asked the pilot to clarify what he meant when he said he was unable to pull it off the ground and he reported the pilot said, "I couldn't pull the yoke back; it must have been the control lock or something." At that point of the conversation he saw and photographed the airplane's gust control lock, an iPad, and a Stratus ADS-B receiver on the wingwalk of the right wing. According to the photograph metadata it was taken at 1547, or about 12 minutes after the estimated time of the accident. The airport manager also reported about that time he did not

see the plastic tub outside the airplane or in the cockpit, nor did he see the gust control lock in the airplane.

Postaccident examination of the airplane by a Federal Aviation Administration inspector revealed no evidence of preimpact failure or malfunction of the elevator primary flight control system. A photograph of the left side view of the empennage with the airplane's gust control lock installed depicted the elevator primary flight control surface in a trailing edge down position (airplane nose down).

A video taken of the airplane during a segment of the takeoff roll depicted the left side of the airplane. A review of a picture extracted from the video revealed the elevator primary flight control surface appeared to be in a trailing edge down position (airplane nose down).

Examination of the airplane's gust control lock assembly revealed a cover, part number 36-590013-5 was missing. The missing cover was designed to cover the throttle and mixture controls, preventing them from being moved with the control lock installed.

Service Bulletin (SB) 27-3459, originally issued in 2002, revised in November 2016, applicable to the accident airplane, cited the need to disseminate safety information concerning the usage of unauthorized or altered gust locks on various Beech propeller airplanes. The SB indicated that compliance restored the airplane to the original type design but did not specify to inspect the gust control lock to assure it was complete. A review of the airframe maintenance records dating to 2001 revealed no entry indicating compliance with the SB, or replacement of the gust control lock.

Certificate:	Private	Age:	66,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	April 19, 2018
Occupational Pilot:	No	Last Flight Review or Equivalent:	May 5, 2018
Flight Time:	1989 hours (Total, all aircraft), 308 h Command, all aircraft)	ours (Total, this make and model), 19	19 hours (Pilot In

Pilot Information

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N41VK
Model/Series:	A36 UNDESIGNAT	Aircraft Category:	Airplane
Year of Manufacture:	1981	Amateur Built:	
Airworthiness Certificate:	Utility	Serial Number:	E-1885
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	June 5, 2019 Annual	Certified Max Gross Wt.:	3600 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	5656 Hrs at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-550-R5B
Registered Owner:	On file	Rated Power:	
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	NQX,6 ft msl	Distance from Accident Site:	14 Nautical Miles
Observation Time:	15:53 Local	Direction from Accident Site:	250°
Lowest Cloud Condition:	Few / 1200 ft AGL	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	12 knots / None	Turbulence Type Forecast/Actual:	Unknown / None
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	Unknown / N/A
Altimeter Setting:	30.04 inches Hg	Temperature/Dew Point:	22°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Summerland Key, FL (FD51)	Type of Flight Plan Filed:	IFR
Destination:	Pompano Beach, FL (PMP)	Type of Clearance:	None
Departure Time:	15:35 Local	Type of Airspace:	

Airport Information

Airport:	Summerland Key Cove Airport FD51	Runway Surface Type:	Asphalt
Airport Elevation:	4 ft msl	Runway Surface Condition:	Dry
Runway Used:	30	IFR Approach:	None
Runway Length/Width:	2550 ft / 20 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	24.660833,-81.449447(est)

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	Donald H Casto; FAA/FSDO; Miramar, FL Andrew Hall; Textron Aviation; Wichita, KS
Original Publish Date:	April 6, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=100877

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 <u>here</u>.