Aviation Investigation Final Report

Location:	Byron, California	**Accident Number:**	WPR20LA141
Date & Time:	May 9, 2020, 13:19 Local	**Registration:**	N4116Y
Aircraft:	Bellanca 8GCBC	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Glider tow		

Analysis

The accident airplane was conducting a glider tow flight. Security camera video recordings of the accident sequence revealed that the tow airplane became airborne about midway down the runway and proceeded to make a shallow climb with the glider in trail at a similar altitude. After the tow airplane became airborne, the glider pitched upward and ascended to a higher altitude while the tow airplane remained in a shallow climb. Shortly afterward, the tow airplane began a shallow descent. Both aircraft then leveled off, with the glider still at a higher altitude than the tow airplane. As the glider began to descend and then ascend, the tow airplane pitched downward in a nose-low attitude, impacted the runway, and nosed over. A postimpact fire ensued. A pilot-rated witness stated that the tow airplane was at an altitude of about 100 ft above ground level at the time that the glider began to ascend after descending.

The pilot of the glider reported that, shortly after takeoff, the canopy began opening and closing rapidly. The glider pilot also reported that, as he attempted to secure the canopy while maintaining control of the glider, he became briefly disoriented. The glider pilot turned back toward the airport and saw that the tow airplane had crashed. The glider landed uneventfully. The glider pilot stated that part of his preflight check was to ensure that the canopy was closed and locked. Postaccident examination found no evidence of any preexisting mechanical malfunction with the glider canopy latching mechanism. It is likely that the pilot did not successfully lock the canopy before takeoff.

The open canopy likely distracted the glider pilot, and he allowed the glider to ascend to an excessive altitude behind the tow airplane, which forced the tow airplane into a nose-down attitude while at a low altitude.

Postaccident examination of the tow airplane revealed no mechanical malfunctions that would have precluded normal operations. The tow rope-cutting mechanism was engaged; thus, the tow pilot likely cut the tow rope at some point during the flight. (The tow rope was located

about 80 ft beyond the main wreckage of the tow airplane in the grassy area adjacent to the runway.) However, the airplane was at an altitude that precluded recovery from the nose-down pitching moment that was induced by the high altitude of the glider.

Probable Cause and Findings

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

The tow airplane pilot's loss of control resulting from the glider pilot's failure to maintain a proper altitude behind the tow airplane, which caused the tail of the tow airplane to be lifted upward and the tow airplane to pitch nose down while at a low altitude. Contributing to the accident was the glider pilot's distraction when the canopy opened in flight.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Pitch control - Attain/maintain not possible
Personnel issues	Use of equip/system - Pilot of other aircraft
Personnel issues	Attention - Pilot of other aircraft
Aircraft	Altitude - Not attained/maintained

Factual Information

History of Flight

Takeoff	Loss of control in flight (Defining event)
Takeoff	Collision with terr/obj (non-CFIT)

On May 9, 2020, about 1319 Pacific daylight time, a Bellanca 8GCBC, N4116Y, was destroyed when it was involved in an accident at Byron Airport (C83), Byron, California. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 glider tow flight.

The glider that was being towed by the accident airplane was a Schweizer SGS 1-26E. The pilot of the glider reported that the accident flight was his and the tow airplane pilot's second flight of the day and that their first flight was uneventful; the airplane towed the glider to an altitude of 3,500 ft, at which point the tow pilot released the glider. For the second flight, the glider pilot stated that he performed the preflight checklist, which included verifying that the canopy was closed and locked. According to the glider pilot, after a normal takeoff, the tow airplane pilot initiated a slight right turn; shortly afterward, the canopy of the glider opened. The glider pilot further stated that the canopy began "flapping" open and closed and that he attempted to secure the canopy while controlling the glider. The glider pilot added that he became briefly disoriented but was able to turn back toward the airport, which is when he saw that the tow airplane had crashed at the end of the runway.

Airport security camera recordings as shown in the figure below, captured the accident sequence. The tow airplane became airborne about midway along the length of the runway and made a shallow climb with the glider in trail at a similar altitude. About 7 seconds after the tow airplane became airborne, the glider pitched upward and ascended to a higher altitude while the tow airplane remained in a shallow climb. Three seconds later, the tow airplane began a shallow descent. About 2 seconds later, the tow airplane and glider appeared to remain level at their respective altitudes, with the glider at a higher altitude than the tow airplane. About 4 seconds later, the tow airplane and glider appeared to descend. The glider then began to ascend about 4 seconds later, while the tow airplane pitched downward to a nose-low attitude. The tow airplane impacted the runway and nosed over, and a postimpact fire ensued. The glider executed a 180° right turn and landed uneventfully on runway 12.

Figure. Screenshots of the accident sequence from a security camera recording (Source: Byron Airport).

A pilot-rated witness who was near the airport reported that he saw the tow airplane during its departure. At that time, the tow airplane was about 50 ft above ground level (agl) with the glider in trail. The witness stated that the glider then "abruptly and abnormally climbed" about 25 ft above the tow airplane. The witness also stated that the glider initially maintained that position but then quickly descended about halfway down to the tow airplane's altitude, which was about 125 to 150 ft agl. The witness further stated that, as the tow airplane and glider passed midway between the taxiway A1 turnoff and the end of runway 30, the tow airplane was at an altitude of about 100 ft agl. The tow airplane seemed to be attempting to maintain altitude, but the glider began to climb again. The witness thought that there was a "30-40° angle on the tow line." The witness further stated that, about 500 ft from the departure end of the runway, "the glider…caused the tow line to pull up on the tail of the tow plane abruptly." The witness added that the tow line had apparently been cut, but the tow airplane was in an "aggressive nose-low attitude" and impacted the ground in a 45° nose-low attitude.

Examination of the accident site revealed that the airplane's fabric covering was mostly consumed by fire, but the primary structure of the wings, fuselage, and empennage were intact. All flight control cables remained attached to their respective flight controls. The rope cutting mechanism (guillotine) in the airplane was found in the engaged position.

Postaccident examination of the tow airplane revealed no preexisting mechanical malfunctions that would have precluded normal operation.

The canopy latch mechanism on the glider was actuated numerous times and functioned normally. The tow rope was located about 80 feet beyond the main wreckage of the tow

airplane in the grassy area adjacent to the runway. Photos of the tow rope showed that one end appeared to be cut, while the opposing end, which included the tow rings, was intact.

The Federal Aviation Administration's (FAA-H-8083-13A), chapter 12, pages 12-11 and 12-12, state in part the following regarding the action to be taken if a glider climbs excessively high during takeoff:

> *The tail of the tow plane may be lifted if the glider climbs excessively high during takeoff. Should this happen, the application of full-up elevator on the tow plane may not be sufficient to prevent an accident. The tow pilot must be ready to pull the release handle in order to regain control of the tow plane. As a rule of thumb, use of a 200-foot tow line would require the glider to climb to over 20 feet above the altitude of the tow plane to present a danger of upset.*
>
> *If at any time the nose of the tow plane is pulled uncontrollably by the glider to a dangerously high or low pitch attitude— PULL THE RELEASE.*

The Coroner's Division of the Office of the Sheriff, Contra Costa County, California, performed the tow pilot's autopsy. According to the autopsy report, his cause of death was multiple blunt impact injuries.

Toxicology testing performed at the Federal Aviation Administration Forensic Sciences Laboratory found glipizide and metoprolol in the pilot's blood and liver specimens and pantoprazole in his blood specimens. Glipizide is a prescription medication that is commonly used to treat high blood sugar levels. Metoprolol is a prescription medication that is used to improve survival after a heart attack and treat high blood pressure, heart-related chest pain, and certain types of heart failure. Pantoprazole is a prescription medicine that is used to suppress stomach acid. Those medications are generally considered not to be impairing.

Pilot Information

Certificate:	Private	**Age:**	68,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	Glider	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	BasicMed	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1550 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bellanca	**Registration:**	N4116Y
Model/Series:	8GCBC	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	232-76
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	October 11, 2019 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	7282.9 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320-O2E
Registered Owner:	Northern California Soaring Assoc	**Rated Power:**	180 Horsepower
Operator:	Northern California Soaring Assoc	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KLVK,393 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	20:53 Local	**Direction from Accident Site:**	225°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	29°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Byron, CA (C83)	**Type of Flight Plan Filed:**	None
Destination:	Byron, CA (C83)	**Type of Clearance:**	None
Departure Time:	13:27 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Byron Airport C83	**Runway Surface Type:**	Asphalt
Airport Elevation:	78 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30	**IFR Approach:**	None
Runway Length/Width:	4500 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	37.835277,-121.631385

Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua
Additional Participating Persons:	Michael Arraiz; Federal Aviation Administration; Oakland, CA
Original Publish Date:	May 19, 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=101258