



Aviation Investigation Final Report

Location:	Fullerton, California	Accident Number:	WPR16LA167
Date & Time:	August 24, 2016, 18:00 Local	Registration:	N16FD
Aircraft:	SIAI-MARCHETTI SF260	Aircraft Damage:	Substantial
Defining Event:	Aerodynamic stall/spin	Injuries:	2 Minor
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

An aerobatic training flight was flown by an airline transport pilot. The preflight, taxi, and initial takeoff roll were uneventful until just after rotation, when the airplane began rolling left. The pilot attempted to correct for the roll to the left by adding full right aileron and rudder, but the airplane continued to roll to the left and impacted the ground off the left side of the runway. After the airplane impacted the ground, it continued to travel across a flight school ramp, striking four airplanes, and impacting a hangar, resulting in substantial damage to the fuselage. A small postaccident fire ensued.

Postaccident examination of the airplane and engine revealed no anomalies that would have precluded normal operation.

A review of onboard video revealed that, as the airplane was taxiing to the runway hold line, the left flap was in the neutral (or retracted) position. Furthermore, the pilot and the passenger discussed the takeoff, but make no mention of the flap position before takeoff.

The airplane operations manual and the Before Take-off checklist state that the takeoff flap setting was 20. However, video evidence shows that the pilot failed to set the flaps to the takeoff setting before takeoff which would have resulted in decreased lift, and an increased stall speed. The pilot was likely unaware of the flap setting as the airplane aerodynamic stalled and the pilot was not able to maintain airplane control.

Airport surveillance video depict the airplane on the runway and accelerating. About 3 seconds later, the nose gear and left main gear were clear of the runway, and the airplane banked slightly to the right. About 2 seconds after that, the airplane was airborne and pitched up slightly and was rolling to the left; 1 second later, the left bank increased to about 15° consistent with the airplane at or near an aerodynamic stall.

Probable Cause and Findings

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

The failure of the pilot to set the flaps to the proper takeoff setting before takeoff, resulting in an aerodynamic stall during takeoff and loss of control.

Findings

Personnel issues	Use of equip/system - Pilot
Personnel issues	Use of checklist - Pilot
Aircraft	Angle of attack - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Takeoff	Aerodynamic stall/spin (Defining event)
Takeoff	Collision with terr/obj (non-CFIT)

On August 24, 2016, about 1800 Pacific daylight time, a Siai-Marchetti SF260 airplane, N16FD, was substantially damaged when it was involved in an accident near Fullerton, California. The airline transport-rated pilot and passenger sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 training flight.

The flight was operated by Air Combat USA, as an aerobatic customer training flight. The pilot, who was a current fighter pilot and instructor in the F/A-18A-D with the United States Marine Corps, had about 7.6 hours of flight experience in the accident airplane type, and the flight was intended to familiarize him with the handling qualities of the airplane type with a passenger on board. The passenger, who was an employee of Air Combat USA, had about 60 hours of flight experience, but did not hold a pilot's certificate.

The pilot reported that the preflight, taxi, and initial takeoff roll were all normal. During the takeoff roll, just after rotation, the airplane began to roll left. The pilot attempted to correct for the roll by adding full right aileron and rudder, but the airplane continued to roll to the left and impacted the ground off the left side of the runway. After the airplane impacted the ground, it continued to travel across a flight school ramp, struck a taxiing airplane and three parked airplanes, and impacted a hangar before coming to rest. A small postaccident fire ensued and was quickly extinguished by airport personnel.

Postaccident examination of the airframe and engine revealed no anomalies that would preclude normal operation.

Four recovered video files were sent to the NTSB Vehicle Recorder Division for analysis. At the start of one video, which was recorded by an onboard video camera system that recorded high-quality audio from the airplane's intercom and alternately from two cameras: one faced aft towards the pilots and the other faced forward from behind the pilots. The aft-facing camera recorded that, just before the airplane taxied to the hold short line, the left flap was visible and appeared to be in the retracted position. The system then switched to the forward-facing camera as the airplane taxied onto the runway as the second airplane in the formation. The pilot and the passenger discussed the takeoff but make no mention of the flap position.

The operator knew before the accident flight that the airplane's flap gauge was inoperative. Therefore, the flaps were set to the takeoff position by matching them to a fully deflected aileron on the same side of the wing. Using this technique to set the flaps for takeoff in a same type of airplane with a functional flap gauge, the flap setting was observed to be about 17°. The airplane's operations manual states that

the takeoff flap setting is 20°. Furthermore, the manual and the Before Take-off checklist state to set flaps to 20° before takeoff.

The other videos were taken from cameras on the airport ramp and captured the accident airplane's path. Review of one of the videos revealed that, about 4 seconds after the cameras began recording, the airplane was on the runway and accelerating. About 3 seconds later, the nose gear and left main gear were clear of the runway, and the airplane banked slightly to the right. About 2 seconds after that, the airplane was airborne and pitched up slightly and was rolling to the left; 1 second later, the left bank increased to about 15°. The video ended at 2 seconds after that, with the airplane left of the runway, and in a left bank of about 10-15°. The next video showed the airplane taking off but did not gain altitude after becoming airborne. About 22 seconds after the cameras began recording, the last video captured the airplane passing over parked airplanes, possibly striking one. The accident airplane came to rest 2 seconds after that, followed by a plume of smoke.

Another video that was reviewed by the NTSB investigator-in-charge showed the lead airplane taking off followed by the accident airplane taking off.



Figure 1: Accident airplane's

takeoff flap position. Figure 2: Exemplar airplane's flaps set to takeoff position.

A Federal Aviation Administration inspector examined and took pictures of an exemplar Siai-Marchetti SF260 airplane and observed the flap position from a rearward angle, which was similar to the angle of the accident airplane's video camera that faced rearward (see figures 1 and 2). The examination revealed that when the flaps were set to the takeoff flap setting of 20°, the flaps were easily discernable to be partially extended, in the exemplar airplane, which is the same type as the accident airplane.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor; Military	Age:	35, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	4-point
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	Last FAA Medical Exam:	
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	May 25, 2016
Flight Time:	(Estimated) 1777 hours (Total, all aircraft), 7.6 hours (Total, this make and model)		

Passenger Information

Certificate:		Age:	Male
Airplane Rating(s):		Seat Occupied:	Left
Other Aircraft Rating(s):		Restraint Used:	4-point
Instrument Rating(s):		Second Pilot Present:	No
Instructor Rating(s):		Toxicology Performed:	No
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	SIAI-MARCHETTI	Registration:	N16FD
Model/Series:	SF260 D	Aircraft Category:	Airplane
Year of Manufacture:	1977	Amateur Built:	
Airworthiness Certificate:	Aerobatic	Serial Number:	305
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	July 5, 2016 100 hour	Certified Max Gross Wt.:	2430 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	9773.1 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	0-540 SERIES
Registered Owner:	N16FD INC	Rated Power:	260 Horsepower
Operator:	Air Combat, USA	Operating Certificate(s) Held:	Certificate of authorization or waiver (COA)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KFUL, 96 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	17:53 Local	Direction from Accident Site:	57°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ None	Turbulence Type Forecast/Actual:	/
Wind Direction:	220°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.89 inches Hg	Temperature/Dew Point:	28°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fullerton, CA (FUL)	Type of Flight Plan Filed:	None
Destination:	Fullerton, CA (FUL)	Type of Clearance:	None
Departure Time:	18:00 Local	Type of Airspace:	Class D

Airport Information

Airport:	FULLERTON MUNI FUL	Runway Surface Type:	Asphalt
Airport Elevation:	96 ft msl	Runway Surface Condition:	Dry
Runway Used:	24	IFR Approach:	None
Runway Length/Width:	3121 ft / 75 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor	Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 Minor	Latitude, Longitude:	33.870555,-117.98166(est)

Administrative Information

Investigator In Charge (IIC):	Shaver, Christopher
Additional Participating Persons:	Rick Hutton; FAA Long Beach FSDO; Long Beach, CA
Original Publish Date:	May 6, 2021
Last Revision Date:	November 5, 2024
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=93886

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](#).