National Transportation Safety Board
Aviation Accident Final Report

Location:	BRIDGEPORT, MI	**Accident Number:**	CHI95LA144
Date & Time:	05/02/1995, 1550 EST	**Registration:**	N100GB
Aircraft:	QUAD CITY CHALLENGER	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

THE PILOT REPORTED THAT WHILE MAKING A RIGHT CLIMBING TURN AFTER TAKEOFF, APPROXIMATELY 500 FEET AGL, THE AIRPLANE STARTED TO BANK TO THE LEFT. DESPITE HIS USE OF FULL RIGHT RUDDER, HE WAS UNABLE TO REGAIN CONTROL. ACCORDING TO THE PILOT, 'THE PLANE KEPT TIGHTENING UP INTO A LEFT FLAT SPIRAL TO THE GROUND.' THE AIRPLANE HAD LEXAN DOORS INSTALLED TO ENCLOSE THE COCKPIT/CABIN AREA. THE DOORS WERE NOT INCLUDED IN THE ORIGINAL DESIGN OF THIS KIT AIRPLANE, BUT WERE SUBSEQUENTLY MADE AVAILABLE AS A STANDARD OR OPTIONAL FEATURE, DEPENDING ON THE MODEL. THE MANUFACTURER STATED THAT WHEN THE DOORS ARE INSTALLED, THE AIRPLANE BECOMES RUDDER DOMINANT AND SENSITIVE AND THAT PILOTS MUST NOT TAKE THEIR FEET OFF THE RUDDER PEDALS.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: INADEQUATE DIRECTIONAL STABILITY OF THE AIRCRAFT (DUE TO INSTALLATION OF LEXAN COCKPIT ENCLOSURE DOORS), WHICH PRECIPITATED A LOSS OF DIRECTIONAL CONTROL.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED
2. (C) ACFT/EQUIP,INADEQUATE DESIGN - KIT MANUFACTURER

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. OBJECT - TREE(S)

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

On May 2, 1995, at 1550 eastern daylight time, an ultralight Challenger, N100GB, was destroyed when it impacted trees shortly after taking off from a private grass strip in Bridgeport, Michigan. The pilot, who was not injured, reported a loss of control. The local 14 CFR Part 91 flight operated without flight plan in visual meteorological conditions.

According to the pilot, while making a right climbing turn after takeoff, at approximately 500 feet above the ground, the airplane started to bank to the left. The pilot stated despite his use of full right rudder, the banking continued. He continued to stated, "The plane kept tightening up into a left flat spiral to the ground."

The pilot had approximately 4 hours of flight time in the Challenger. The optional kit doors were installed on the ultralight during all four hours of flight time.

In a telephone interview, the pilot stated that he had experienced this same type of left banking once before while landing. In that incident he was able to regain control of the ultralight. The pilot stated he believes that the ailerons of the Challenger are almost non-effective and a pilot needs to use the rudder more then in any other airplane that he has ever flown before. He stated that the rudder has to be used to make the Challenger turn.

The Chief Engineer with Popular Flying Association in the United Kingdom, stated in a telephone interview that the Challenger is directionally unstable when the doors are installed. As a result, several modifications to the Challenger are mandatory before their operation is permitted in the United Kingdom. The modification consists of the installation of a larger tail fin, rudder, and reinforcements.

This investigator has spoken to the President of the Quad City Ultralight Aircraft Corporation, the Challenger manufacturer, on several occasions concerning the flight characteristics of the Challenger when the doors are installed. In a written statement, the president stated the Challenger II was designed in 1984 as a two place ultralight trainer to be used by Challenger dealers to train their customers to fly the single seat Challenger ultralight. The president stated, "We never intended [the Challenger] to have doors." The doors were designed by a Challenger dealer in Canada. A set of these doors were purchased by Quad City Ultralight Aircraft Corporation and installed. The president stated, "We liked the doors for winter flying and noticed no stability problems other than they made the plane more rudder dominated; i.e., you had to steer more with your feet than previously." Because of the large request, Quad City Ultralight Aircraft Corporation started offering the doors in kit form to their customers and dealers.

When questioned about the directional stability of the Challenger when the doors are installed, the president stated he believes the problem lies in the inexperience of the pilots. He stated the Challenger is a rudder dominant and sensitive airplane. He continued to stated that when the doors are installed, a pilot can not take his feet off the rudder pedals. The president stated that inexperienced pilots find it difficult to adapt to this kind of flying.

Pilot Information

Certificate:	Flight Instructor; Commercial	**Age:**	60, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane Single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	**Last FAA Medical Exam:**	05/23/1994
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	3091 hours (Total, all aircraft), 4 hours (Total, this make and model), 12 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	QUAD CITY	**Registration:**	N100GB
Model/Series:	CHALLENGER CHALLENGER	**Aircraft Category:**	Ultralight
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental	**Serial Number:**	CW0844
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	05/25/1994, Annual	**Certified Max Gross Wt.:**	850 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	ROTAX
ELT:	Not installed	**Engine Model/Series:**	503
Registered Owner:	DOYLE W. MCKIMMY	**Rated Power:**	52 hp
Operator:	DOYLE W. MCKIMMY	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	, 0 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	0000	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Visibility**	15 Miles
Lowest Ceiling:	Broken / 9000 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	16°C
Precipitation and Obscuration:			
Departure Point:	(NONE)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	1550 EST	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	CHRISTINE M CORSONES	**Report Date:**	06/20/1996
Additional Participating Persons:	CHRIS LAWRENCE; GRAND RAPIDS, MI		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		