Aviation Investigation Preliminary Report

Location:	Fullerton, CA	**Accident Number:**	WPR25FA072
Date & Time:	January 2, 2025, 14:09 Local	**Registration:**	N8757R
Aircraft:	Vans Aircraft RV-10	**Injuries:**	2 Fatal, 8 Serious, 11 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

On January 2, 2025, about 1409 Pacific standard time, an experimental amateur built Vans Aircraft RV-10, N8757R, was destroyed when it was involved in an accident near Fullerton, California. The pilot and passenger were fatally injured, and there were 19 ground injuries, 8 of which were serious, and 11 minor. The airplane was operated as a Title 14 *Code of Federal Regulations* 91 personal flight.

On the day of the accident a witness, who was an acquaintance of the pilot, observed him taxi the airplane from the pilot's hangar in the southeast corner of the airport towards the runway 24 runup area. He could see the pilot was in the front left seat, and passenger in the front right seat. Security video footage revealed that the airplane was in the runup area for about 3 minutes and during that time although the left door was in the down position, it was not flush with the fuselage. Audio recordings provided by the Federal Aviation Administration indicated that about 1402, the pilot transmitted to the Fullerton control tower that he was ready to taxi to runway 24.

The airplane was equipped with an Electronic Flight Instrument System (EFIS) that was capable of recording multiple engine, airframe, and flight parameters. According to preliminary data extracted from the system, about 1407 the airplane began the takeoff roll, and by the time it had reached the end of the runway it had climbed to about 150 ft mean sea level (msl) (about 60 ft above ground level (agl)) and was traveling at a ground speed of about 108 knots. For the next 30 seconds the airplane remained on runway heading, while accelerating and climbing to about 500 ft msl. About that time, the pilot transmitted "immediate landing required" over the control tower frequency. The tower controller asked if the pilot could make a left turn and cleared the airplane for landing on any runway. After a few exchanges, the pilot reported that he would return for landing on runway 24. About 30 seconds after the pilot's initial call, the airplane had completed a 180° left turn, while climbing to about 950 ft msl, and decelerated to about 95 knots. The airplane continued on the left downwind leg, and about 40 seconds later it passed the runway 24 threshold, having now descended to 435 ft msl and slowed to 85 knots. The airplane then began a left turn, and about that time an unintelligible transmission was heard. The airplane continued to descend until it impacted the roof of a furniture manufacturing facility about 1,500 ft short of the approach end of runway 24.

A witness, who was located on the airport ramp on the south side of runway 24, about 850 ft short of the departure end, observed the airplane fly by him after takeoff. It passed from right to left at what he considered to be a high speed, but at a lower altitude than he would have expected considering its distance down the runway. Once the airplane had departed the runway environment, and was about 100 ft agl he realized its left door was open and up. He then saw an arm reach up and pull the door down. By this time the airplane was far enough away that he could no longer discern what was happening, and he assumed the pilot was able to rectify the situation.

Multiple witnesses, who were all pilots, observed the airplane during the final stages of the flight, in the left downwind leg of the traffic pattern. They all provided similar observations of it flying lower than normal and banking aggressively left as it made the transition from downwind to base. Three witnesses then saw the airplane roll aggressively again to the left for what they assumed was a turn to final, all stating that they could almost see the full wing profile, and were concerned it may stall. The airplane then rolled right as its nose dropped, and dove towards the warehouse where it collided in a fireball. The witnesses all stated that just before impact they saw a white piece fall from the airplane. They described the piece as panel-like, and that it “floated” or “fluttered” to the ground.

A witness provided video recorded on a dashcam in a car located about 500 ft south of the accident site. The airplane came into view about 1 second before impact, and the engine could be heard operating.

Within the furniture manufacturing facility, the airplane had struck a series of warehouse pallet rack frames loaded with foam and wood furniture material. The fuselage came to rest upright on a heading of about 330°, about 6 ft above the ground on a deformed pallet rack. The forward cabin and most of both wings were consumed by fire, and the empennage was mostly intact. The entire engine, firewall, and instrument panel assembly was located about 40 ft beyond the main wreckage and was crushed and twisted but otherwise free of fire damage.

The two-blade propeller and hub remained attached to the engine, and the blades exhibited chordwise scratches and leading edge nicks. The spinner was crushed and exhibited spiral scratches to its forward surface.

All primary airframe components and flight control surfaces were located within the facility, except for the left main cabin door, which was found on the building’s roof about 150 ft southeast of the impact point and directly below the airplanes flight path.

The RV-10 design incorporated two “gull-wing” doors on either side of the cabin. The doors were comprised primarily of composite fiberglass construction and were mounted to the roof of the cabin by two steel hinges, with extension limited by a gas strut. In the closed position, the door was secured by fore and aft tubular aluminum latch pins, that extended into UHMW polyethylene pin blocks mounted to the forward and aft pillar structure in the airframe door opening. The latch pins were connected to the door lock handle via a rotary gear assembly. To lock the door, the handle is rotated forward, which extends the latch pins into the pin blocks. The handle contains a release lever that locks the pins in place when they have reached the fully extended position. Once locked, the door handle cannot be moved to the open position until a button at the end of the release lever has been pressed.

The door included a secondary safety latch system, which was intended to clasp the door in the down position should the lock handle not be manually engaged. The system was comprised of a laminated

aluminum hook assembly, mounted to the inner lower side of each cabin door. The system engages automatically and without pilot or passenger intervention when the door is lowered, as the hook locks into a plate fitting in the cabin door frame.

The airplanes primary kit components were shipped to the pilot between 2007 and 2008, and he completed construction in 2011. The secondary door latch was included as standard in all RV-10 finish kits shipped from January 4, 2010, onwards, with a retrofit kit available for all previously constructed airplanes. Its installation was recommended before further flight as described in Service Bulletin 10-1-4, published by Vans Aircraft on January 4, 2010. Records provided by Vans Aircraft indicated that the pilot was sent the retrofit safety latch kit on January 25, 2010.

Examination of the airplane wreckage revealed that the pilot had made a series of modifications to the standard door locking system including the use of solid steel locking pins rather than the kit-supplied aluminum pins, along with replacement of the UHMW polythene door blocks with chamfered aluminum blocks. Additionally, the secondary safety latch had not been installed (see figure 1), and the door latch indicator system had been modified.

The left cabin door located on the facility roof was largely intact and had pulled away from its roof hinges. Its window had shattered, and all the plexiglass pieces were accounted for in the immediate vicinity. The door handle was found just short of the forward closed and locked position (see figure 1), and because it was not fully forward, its locking button had not engaged. The lock pins were found extended about 1/2 inch out of the door ends, and when the door handle was tested by moving it forward, the pins extended a further 7/16 inch and the locking button engaged.

Figure 1 – Left cabin door as-found, with the forward and aft door pins marked by the blue arrows. The area that the secondary door latch should have been installed is circled in red.

The door latch indicator system supplied with the kit was comprised of four magnetic reed switches, mounted individually within each door pillar. The switches were configured to confirm via LED warning lamps on the instrument panel that each door pin was in the fully extended and locked position. On the accident airplane, it appeared that only two reed switches had been installed, with each mounted to the aft pillars of both doors. As such, the modified system would not have warned the pilot if the forward latch pins had failed to fully engage.

Aircraft and Owner/Operator Information

Aircraft Make:	Vans Aircraft	**Registration:**	N8757R
Model/Series:	RV-10	**Aircraft Category:**	Airplane
Amateur Built:	Yes		
Operator:	On file	**Operating Certificate(s) Held:**	None
Operator Designator Code:			

Meteorological Information and Flight Plan

Conditions at Accident Site:	VMC	**Condition of Light:**	Day
Observation Facility, Elevation:	KFUL,86 ft msl	**Observation Time:**	13:53 Local
Distance from Accident Site:	1 Nautical Miles	**Temperature/Dew Point:**	22°C /0°C
Lowest Cloud Condition:	Clear	**Wind Speed/Gusts, Direction:**	/ None
Lowest Ceiling:	None	**Visibility:**	8 miles
Altimeter Setting:	30.01 inches Hg	**Type of Flight Plan Filed:**	NONE
Departure Point:	Fullerton, CA	**Destination:**	Fullerton, CA

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	8 Serious, 11 Minor	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal, 8 Serious, 11 Minor	**Latitude, Longitude:**	33.873481,-117.97067

Administrative Information

Investigator In Charge (IIC):	Simpson, Eliott
Additional Participating Persons:	Marcus A Giordano; FAA; Riverside, CA Rian Johnson; Vans Aircraft; Aurora, OR
Investigation Class:	Class 3
Note:	