



Aviation Investigation Final Report

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|--------------------------------|---------------------------------------|-------------------------|-------------|
| Location: | Warrenton, Virginia | Accident Number: | GAA16CA477 |
| Date & Time: | September 9, 2016, 12:15 Local | Registration: | N750SS |
| Aircraft: | PACIFIC AEROSPACE CORP LTD 750XL | Aircraft Damage: | Substantial |
| Defining Event: | Loss of control on ground | Injuries: | 14 None |
| Flight Conducted Under: | Part 91: General aviation - Skydiving | | |

Analysis

The pilot reported that this was his third skydiving flight of the day and he performed a back taxi on the runway for takeoff. He further reported that as he rotated the airplane for takeoff, he heard a "steady" stall warning horn, the flight controls felt mushy, and the airplane would not climb. The pilot reported that he aborted the takeoff and applied max braking and reverse thrust, but the airplane overran the runway remaining. Subsequently, the landing gear collapsed and the airplane collided with a fence.

The left and right wing sustained substantial damage.

After the accident, the pilot reported that he observed the wing flaps in the fully retracted position. He reported that the flaps should have been set to 20 degrees for takeoff. The pilot reported that he forgot to set the flaps during the back taxi for takeoff because he was communicating with other airplanes near the airport. The pilot reported that he did not use a physical checklist, but he did run through a checklist mentally.

The pilot reported no preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to set the wing flaps for takeoff, which resulted in an aerodynamic stall, an aborted takeoff, and a runway overrun.

Findings

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|-----------------------------|--|
| Personnel issues | Forgotten action/omission - Pilot |
| Aircraft | Takeoff distance - Not attained/maintained |
| Aircraft | Configuration - Incorrect use/operation |
| Aircraft | Angle of attack - Capability exceeded |
| Aircraft | TE flap control system - Not used/operated |
| Aircraft | Angle of attack - Capability exceeded |
| Environmental issues | Fence/fence post - Contributed to outcome |

Factual Information

History of Flight

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|---------------------------------|--|
| Takeoff | Stall warn/stick-shaker/pusher |
| Takeoff | Aerodynamic stall/spin |
| Takeoff-rejected takeoff | Loss of control on ground (Defining event) |
| Takeoff-rejected takeoff | Runway excursion |
| Takeoff-rejected takeoff | Collision with terr/obj (non-CFIT) |

Pilot Information

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|----------------------------------|---|--|-------------------|
| Certificate: | Commercial | Age: | 36,Male |
| Airplane Rating(s): | Single-engine land | Seat Occupied: | Left |
| Other Aircraft Rating(s): | Helicopter | Restraint Used: | 4-point |
| Instrument Rating(s): | Airplane; Helicopter | Second Pilot Present: | No |
| Instructor Rating(s): | None | Toxicology Performed: | No |
| Medical Certification: | Class 1 Without waivers/limitations | Last FAA Medical Exam: | December 9, 2015 |
| Occupational Pilot: | Yes | Last Flight Review or Equivalent: | November 21, 2014 |
| Flight Time: | (Estimated) 1657 hours (Total, all aircraft), 229 hours (Total, this make and model), 1017 hours (Pilot In Command, all aircraft), 197 hours (Last 90 days, all aircraft), 80 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft) | | |

Passenger Information

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|----------------------------------|----|--|----------|
| Certificate: | | Age: | |
| Airplane Rating(s): | | Seat Occupied: | Center |
| Other Aircraft Rating(s): | | Restraint Used: | Lap only |
| 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: | | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Rear |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Right |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | |
| Airplane Rating(s): | Seat Occupied: | Left |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|
| Certificate: | Age: |
| Airplane Rating(s): | Seat Occupied: Left |
| Other Aircraft Rating(s): | Restraint Used: Lap only |
| 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: | |

Passenger Information

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|---------------------------|-----------------------------------|
| Certificate: | Age: |
| Airplane Rating(s): | Seat Occupied: Right |
| Other Aircraft Rating(s): | Restraint Used: Lap only |
| 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: | |

Passenger Information

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

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Unknown |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Unknown |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Unknown |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Female |
| Airplane Rating(s): | Seat Occupied: | Unknown |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

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|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Unknown |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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: | | |

Passenger Information

| | | |
|---------------------------|-----------------------------------|----------|
| Certificate: | Age: | Male |
| Airplane Rating(s): | Seat Occupied: | Unknown |
| Other Aircraft Rating(s): | Restraint Used: | Lap only |
| 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

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|--------------------------------------|----------------------------|---------------------------------------|-----------------|
| Aircraft Make: | PACIFIC AEROSPACE CORP LTD | Registration: | N750SS |
| Model/Series: | 750XL NO SERIES | Aircraft Category: | Airplane |
| Year of Manufacture: | 2005 | Amateur Built: | |
| Airworthiness Certificate: | Normal | Serial Number: | 115 |
| Landing Gear Type: | Tricycle | Seats: | 6 |
| Date/Type of Last Inspection: | Unknown | Certified Max Gross Wt.: | 7500 lbs |
| Time Since Last Inspection: | | Engines: | 1 Turbo prop |
| Airframe Total Time: | | Engine Manufacturer: | Pratt & Whitney |
| ELT: | Installed, not activated | Engine Model/Series: | PT6A-34 |
| Registered Owner: | | Rated Power: | 750 Horsepower |
| Operator: | | Operating Certificate(s) Held: | None |

Meteorological Information and Flight Plan

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|---|----------------------------------|---|------------------|
| Conditions at Accident Site: | Visual (VMC) | Condition of Light: | Day |
| Observation Facility, Elevation: | KHWY,390 ft msl | Distance from Accident Site: | 5 Nautical Miles |
| Observation Time: | 16:15 Local | Direction from Accident Site: | 230° |
| Lowest Cloud Condition: | Clear | Visibility | 10 miles |
| Lowest Ceiling: | None | Visibility (RVR): | |
| Wind Speed/Gusts: | / | Turbulence Type Forecast/Actual: | / None |
| Wind Direction: | | Turbulence Severity Forecast/Actual: | / N/A |
| Altimeter Setting: | 29.97 inches Hg | Temperature/Dew Point: | 33°C / 18°C |
| Precipitation and Obscuration: | No Obscuration; No Precipitation | | |
| Departure Point: | Warrenton, VA (7VG0) | Type of Flight Plan Filed: | None |
| Destination: | Warrenton, VA (7VG0) | Type of Clearance: | None |
| Departure Time: | 12:15 Local | Type of Airspace: | Class G |

Airport Information

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|-----------------------------|-------------------------|----------------------------------|--------------------------|
| Airport: | WARRENTON AIR PARK 7VG0 | Runway Surface Type: | Concrete;Dirt;Grass/turf |
| Airport Elevation: | 442 ft msl | Runway Surface Condition: | Dry |
| Runway Used: | 22 | IFR Approach: | None |
| Runway Length/Width: | 2215 ft / 70 ft | VFR Approach/Landing: | None |

Wreckage and Impact Information

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|----------------------------|---------|-----------------------------|---------------------------|
| Crew Injuries: | 1 None | Aircraft Damage: | Substantial |
| Passenger Injuries: | 13 None | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 14 None | Latitude, Longitude: | 38.650833,-77.789718(est) |

Preventing Similar Accidents

Preventing Rote Callouts

Occasionally, pilots will make callouts without first verifying the cockpit indication that corresponds with the callout because they are acting out of habit and make the callouts based on what they expect to see but do not take the time to verify it. Rote callouts can prevent or delay the pilots' proper response during a critical phase of flight or cause the pilots to think that an action has been taken when it has not. All pilots can be vulnerable to making errant callouts if they become complacent, which allows habits and expectations to influence their responses. Taking explicit steps to direct attention, methodically verify the status of a checklist item, and make callouts using standard phraseology can reduce the chances of making errors.

For every callout, there should be a corresponding indication or setting. Pilots should train themselves to direct their attention on the indicator or display long enough to be sure of what the indicator is telling you every time. Physically touching a control or pointing to an indicator can be a useful technique. Adopting a methodical pace when reading or responding to checklist items can also ensure that pilots see and verify each cockpit indication.

Cross checking related indications to see if the aircraft's performance is changing is another strategy. For example, a callout of "flaps fifteen" may be accompanied by a characteristic change in pitch attitude and airspeed, so knowing what to expect on the other instruments, not just the flap position indicator, is critical. Pilots should also be attentive to an indicator's color and not anticipate a color change before it occurs. For example, a thrust reverse indicator is often amber when reversers are in transit but green when reversers are fully deployed.

Make a point of giving and receiving a proper response to checklist callouts. Improper or nonstandard phraseology, nods, mumbles, and nonverbal signals are unacceptable. If callouts are crisp and catch any missed indications, fellow pilot will likely follow suit.

Operational distractions, such as radio calls, can interrupt or drown out a callout. Stay focused and assertive and repeat the callout if needed. Prevent nonoperational distractions, such as cockpit conversations, by implementing a "sterile cockpit" where callouts are expected.

Awareness is a large part of the solution. Add callout awareness to preflight briefings and be ready to verbalize each and every discrepancy.

See http://www.nts.gov/safety/safety-alerts/documents/SA_018.pdf for additional resources.

The NTSB presents this information to prevent recurrence of similar accidents. Note that this should not be considered guidance from the regulator, nor does this supersede existing FAA Regulations (FARs).

Administrative Information

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| Investigator In Charge (IIC): | Gerhardt, Adam |
| Additional Participating Persons: | John Teehan; FAA; Dulles, VA |
| Original Publish Date: | January 18, 2017 |
| Note: | This accident report documents the factual circumstances of this accident as described to the NTSB. |
| Investigation Docket: | https://data.nts.gov/Docket?ProjectID=93995 |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).