



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

RESTRAINT SYSTEM FACTUAL REPORT

WPR19MA177

A. ACCIDENT

Location: Mokuleia, Hawaii
Date: June 21, 2019
Aircraft: Beech 65-A90, N256TA, S/N LJ-256
NTSB IIC: Elliott Simpson

B. EXAMINATION PARTICIPANTS:

Elliott Simpson
Senior Aviation Accident Investigator
National Transportation Safety Board
Western Pacific Region
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C. SUMMARY

On June 21, 2019, at 1822 Hawaii-Aleutian standard time, a Beech 65-A90, N256TA, collided with terrain after takeoff from Dillingham Airfield (HDH), Mokuleia, Hawaii. The commercial pilot and ten passengers sustained fatal injuries, and the airplane was destroyed. The airplane was owned by N80896 LLC and was being operated by Oahu Parachute Center (OPC) under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a local sky-diving flight. Visual meteorological conditions prevailed, and no flight plan had been filed.

D. DETAILS OF THE INVESTIGATION

1.0 Seating and Restraint Configuration

The airplane was equipped with two vinyl-covered longitudinal straddle-bench seats mounted about 6 inches inboard from the cabin walls. The left bench extended from the back of the pilot's seat through to the forward edge of the cabin door opening. The right bench extended from the copilot's seat through to the aft edge of the cabin door opening (Photos 1,2,3).



Photo 1: Photo of Bench Seats Viewed from the Cabin Door.¹



Photo 2: Photo of Bench Seats Viewed from the Rear of the Airplane.

¹ Photos 1 through 2 are witness-provided video screenshots of the accident airplane, reportedly taken on the day of the accident.



Photo 3: Photo of Copilot Seat Facing Aft (the cream colored center bench was not installed at the time of accident)

The copilot's seat had been installed facing backwards², and was used to carry one jumper³ (Photo 3).

The right bench had a seat belt capacity for seven jumpers, and the left bench for five⁴ (Figure 1).

² The copilot control yoke had been removed.

³ According to the airplane's owner, and the owner of Oahu Parachute Center (OPC), the copilot seat was always occupied by a tandem instructor for weight and balance purposes.

⁴ The airplane's owner stated that an additional jumper seatbelt had been installed on the copilot left seat rail to accommodate for a jumper seated over the wing spar on the floor area. The owner of OPC stated that he had never seen this belt installed, and would have removed it if he had, as he did not want any jumpers sitting on the floor.

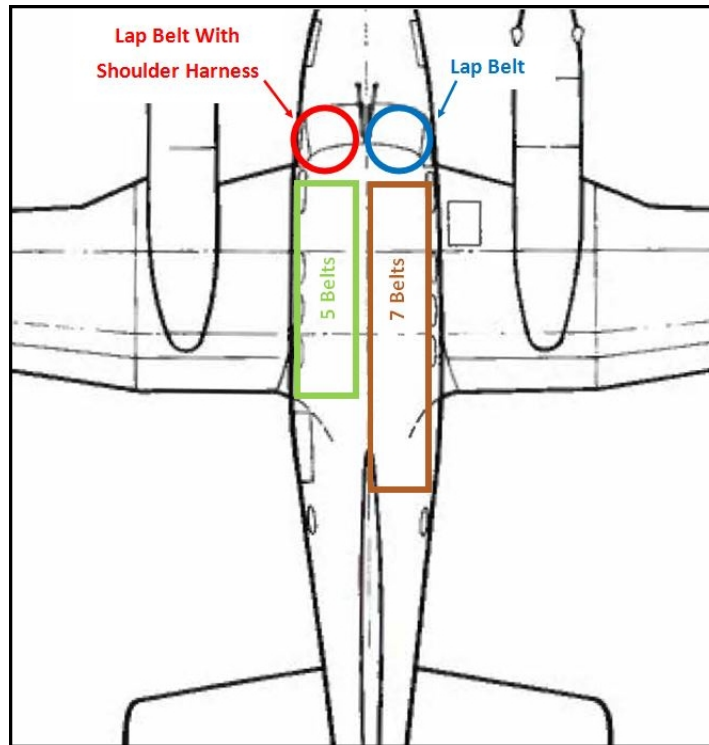


Figure 1: Seating Locations at the Time of the Accident

Each parachute jumper was restrained on the benches using a single lift-belt buckle harness, intended to be looped through the lower leg or horizontal back strap of their respective parachute harnesses⁵. The belts were tethered with floor fittings to the pre-existing seat rails on the outboard sides of the benches. Two types of buckle assemblies appeared to have been installed; both manufactured by AmSafe, specifically the 5000B3, and 440785 systems.

The benches were consumed by post-accident fire, however video evidence suggested that they were mounted through a pivoting system, which allowed for partial lateral movement as the jumpers maneuvered within the cabin.

The pilot's seat appeared to be the standard factory-installed type and was equipped with an inertia reel four-point shoulder harness and lift-latch lap belt system. The copilot's seat was equipped with a similar lap belt, and no shoulder harness. The pilot and copilot seat lap belts were composed of blue-colored webbing material.

1.1 Maintenance Records

Review of maintenance records and FAA major repair and alteration documentation (337's) indicated that in 1996, the airplane was converted for parachute jump operation by removal of the

⁵ Federal Aviation Administration Advisory Circular 105-2E provides suggestions to improve sport parachuting safety, and includes specific reference to jumper tethering systems. The circular stated that in straddle-bench configurations, single point, single tether restraints are not very effective, and that for superior restraint, dual tethers should be installed, one on either side of each jumper.

copilot seat, copilot flight controls, and the addition of fourteen seatbelts mounted to the floor on the copilot and cabin seat rails. The floor loading parameters for the updated configuration were based on an engineering assessment performed by Beech Aircraft Corporation in 1989.

On February 15, 2010, the airplane appeared to be the subject of an FAA “ramp check”, during which an “Aircraft Condition Notice” was issued. One of the action items included a finding that 13 seatbelts had been installed, even though a 337 document stated that 14 were installed. A subsequent maintenance logbook dated April 16, 2010 stated that the 14th seatbelt was installed.

Extensive airframe maintenance was subsequently performed during 2010, and although there were no records indicating the airplane had been reconfigured with the standard cabin seating, a 337 document signed September 10, 2010, stated, “Removed 8 passenger seats and one copilot seat, and all other interior furnishings in accordance with FAA DER approved Report 100714 dated 7/26/10 titled "Engineering Review - Passenger and Copilot Seat Removal." Replacement /TSO C22 seat belts installed on existing seat mounting tracks in same locations as removed seats to accommodate floor seating of sport parachute jumpers. No Weight and balance change”.

No corresponding logbook entry was located indicating such modifications. Attachment 1 contains the referenced records.

2.0 Examination

The pilot’s lift-latch lap belt was found in the latched position, and had melted into the seat cushion. The two shoulder strap locking tabs were free and unsecured, consistent with the pilot not using the shoulder harness⁶ (Photo 4). No buckles were located that could be definitively attributed to the copilot seat.



Photo 4: Pilot Seatbelt Assembly

⁶ Review of multiple onboard videos revealed that the accident pilot did not utilize the shoulder harness.

Twelve lift-latch buckle assemblies for the parachute jumpers were located. Four were in the latched position (Photo 5), with the remaining eight unlatched (Photo 6). One of the unlatched buckles sustained downward bending damage to its lifting tab, and a section of its associated latch assembly base appeared to have been thermally consumed. The latch assembly of the remaining buckles were undamaged, and their locking pins remained squarely recessed within each latch base. One of the latched buckle assemblies was still wrapped around the lower parachute harness of a solo jumper (Photo 5), the remaining buckle assemblies were distributed within the wreckage, and an accurate assessment of their location could not be determined.



Photo 5: Latched Bench Seat Buckles, with a Parachute Harness Still Attached to the Left Buckle



Photo 6: Unlatched Bench Seat Buckles

Fragments of the floor rail, along with nine floor tethering ring assemblies were located. Three of the rings had deformed and exhibited stretch damage (Photo 7). The remaining rings were intact (Photo 8).



Photo 7: Deformed/Stretched Floor Tethering Rings



Photo 8: Undamaged Tethering Rings

3.0 Seat Belt Usage Protocols

According to the airplane owner, when he operated the airplane, solo parachute jumpers typically used their own seat belt. For tandem jumpers, while each occupant is required to use their own belt, in his experience, it is not unusual for a tandem instructor to share the same belt with their student.

According to the owner of OPC, all passengers are instructed to wear their own seat belt, and both the tandem instructors and their students are belted to the airframe independently, and are not attached to each other until they approach the jump altitude⁷. In his experience as a tandem instructor, he did not want to be hooked to a passenger should something go wrong, as it would impede his ability to react, maneuver, or escape. He had heard of occasions when camera operators had been unrestrained due to their desire to maneuver around the cabin to record footage. Affiliates

Attachment 2 contains the referenced statements.

⁷ According to separate interviews with various OPC associates, passengers were briefed by their tandem instructors to remain seated with their seat belts fastened until the airplane reached an altitude of 1,500 ft. Once at a altitude, passenger parachutists were then instructed to unbuckle their seat belts and passenger parachutists would then connect themselves to the tandem instructor. See the Operations Report for further details.

E. CONCLUSION

Maintenance records provided contradictory and incomplete accounts of the airplane's actual seat belt and seating arrangements, and as such the configuration was compiled using witness statements and photographic/video evidence.

At the time of the accident, the airplane appeared to have been configured to carry and secure thirteen parachute jumpers and one pilot for a total of fourteen occupants. It was equipped with two straddle-bench seats for the jumpers, configured with twelve single point lift-latch buckle harnesses. The copilot seat was configured to face aft and was utilized to carry the thirteenth jumper; it was equipped with a standard lift-latch lap buckle. The pilot seat was similarly equipped with a lift-latch lap belt system in addition to a two-point shoulder harness.

Post-accident, all twelve of the bench seat lift-latch buckle assemblies for the parachute jumper positions were located. Four were found in the latched position, with the remaining eight unlatched. The pilot's lap buckle was found in the latched position. No buckles were located that could be attributed to the copilot seat.

Nine total floor-mounted tethering rings utilized to secure the parachute jumper buckle assemblies to the airframe were located. Six appeared undamaged and had retained their shape, and three exhibited stretch deformation.

Company protocol appeared to dictate that each occupant be independently tethered to the airframe with their own seatbelt. Therefore, under these conditions, five occupants were potentially unsecured at the time of impact. However, evidence suggests that it would not be unusual for a tandem instructor to be secured using a seatbelt shared with their student. Under these conditions, assuming all tandem instructors shared a belt with their students, it is possible that three occupants were unsecured at the time of impact.