



**NATIONAL TRANSPORTATION SAFETY BOARD**

**Office of Aviation Safety**

**Western Pacific Region**

**August 1, 2012**

**LEFT & RIGHT ELEVATOR EXAMINATION**

**WPR12FA332**

**This document contains 14 embedded photos.**

**(8 pages)**

# Airplane Examination Report

Tuesday, July 31, 2012

## Aircraft info

Piaggio P180  
N146SL

## Accident Location:

Henderson Executive Airport (KHND)  
Lat: 35° 58.37  
Long: 115° 08.06  
Elev: 2492 feet

## Circumstances/Terrain:

Captain: Raul Torres  
Co-pilot: Jared Burns  
Passengers: 2  
Part 135 flight

- 7.27.2012 Airplane received a ferry permit for a landing gear door issue. VNY-CMA
- 7.27.2012 Airplane gear door maintenance performed at CMA
- 7.28.2012 CMA to SAN
- 7.28.2012 SAN to HND with 2 passengers, arrived at 0945
- Upon arrival at HND crew performed a post flight and discovered that the left elevator was missing

## Participants

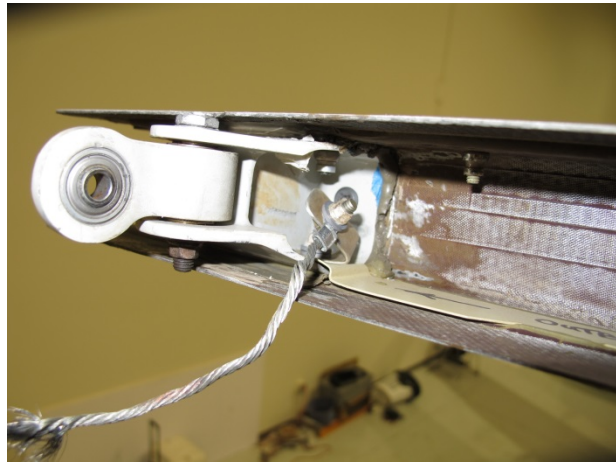
Van McKenny	NTSB
James Rue	Avantair
David Duncan	Piaggio Aero
Gary Rucker	FAA



Photo taken Saturday, July 28, 2012, at Henderson Executive Airport.

## **Airframe**

- AD 2010-23-01 (Corrosion on horizontal stab), completed on June 7, 2012. TT 8181.5 hrs, 6184 cycles
- Horizontal stab carbon fiber, elevator is honeycomb sandwich bonded aluminum.
- 7.28.2012, TT 8351.9 hrs, 6313 cycles
- Tail
  - Left elevator not present on horizontal stab
  - No damage identified to vertical stab, rudder, or horizontal stab.
  - Elevator attach fittings (2x) on the trailing edge of left horizontal stab were present and securely bonded to the horizontal stab, no deformation, scoring, or bending noted.
  - Bonding wires were broken and frayed at the center span fitting and end fitting. Both bonding wire L-brackets on the horizontal stab were bent outboard.

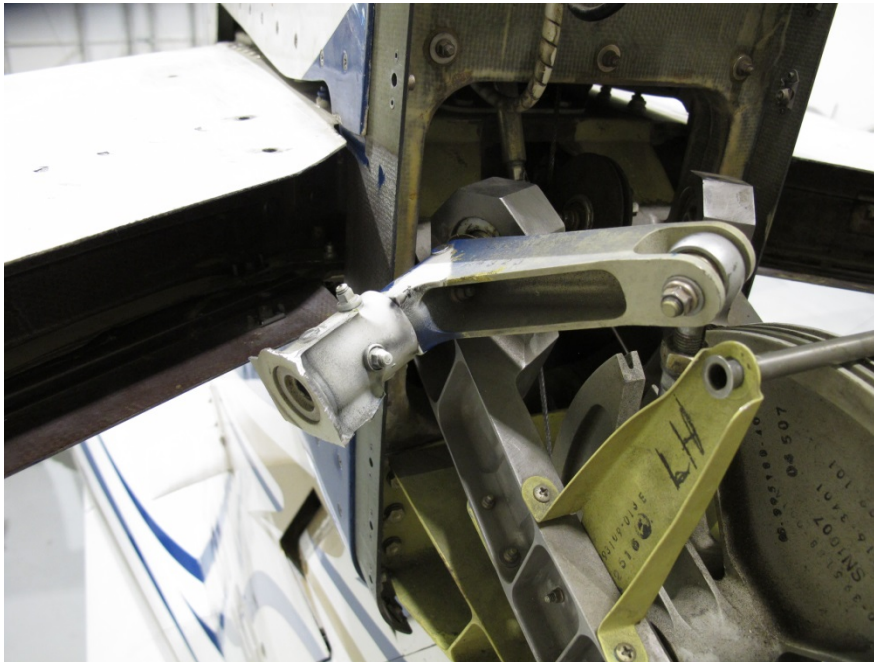


Left outboard elevator attachment fitting.



Left midspan elevator attachment fitting.

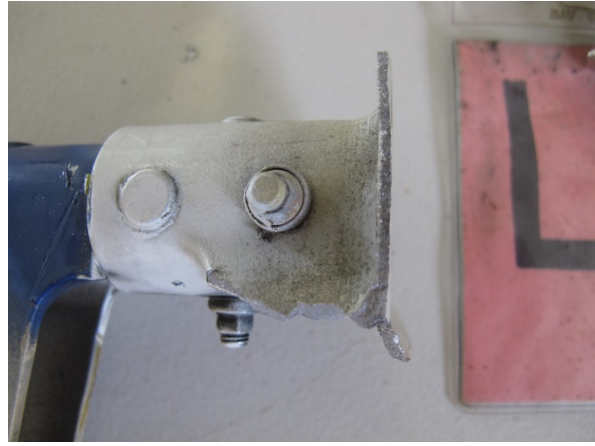
- Left elevator command lever separated from elevator torque tube. Fracture surfaces are bright, granular, with 45-degree shear lips.
- Elevator command lever bearing present with the command arm attach bolt secure. Outboard bearing seal had popped off.



Left elevator command lever with torque tube attached.



Left elevator command lever torque tube fracture.



- Right elevator had been removed by an A&P Mechanic under the direction of Avantair on Sunday, July 29. The attaching hardware (bolts, bushings, & nuts) were removed and FedEx'd to Avantair's facility in Clearwater, FL.



Right horizontal stabilizer with elevator removed.



Right elevator



Right hand elevator attachment hardware. Hardware was removed by a A&P mechanic on 29 July, 2012, and sent to the Avantair facility in Florida. FAA Inspectors were present when the hardware package was opened by Avantair personnel. The photo is the hardware as received by Avantair and FAA personnel.

- Cockpit Voice Recorder removed to be sent to NTSB Vehicle Recorders Lab
- Elevator command lever removed and to be sent to NTSB Materials Lab

# Elevator Examination Report

Wednesday, August 01, 2012

## Exam Location:

Van Nuys Flight Standards District Office  
Van Nuys, CA

NTSB Western Pacific Regional Office  
1515 W 190th St, #555  
Gardena, CA 90248

## Participants:

Van McKenny	NTSB
Cotry Shearrill	FAA

## Event Location:

City:	Camarillo, CA
Latitude/Longitude:	N34 12.86/W119 05.68
Elevation:	65 feet msl

## Circumstances/Terrain:

On July 31, 2012, Camarillo Airport operations personnel located the left elevator of N146SL north of runway 8 at intersection "C." The elevator was identified by Avantair personnel and a Van Nuys FAA Inspector retrieved the elevator from airport personnel. The FAA Inspector examined the elevator and transferred custody of it to the NTSB Investigator-in-Charge.

## Examination Summary:

The elevator was placed on a table and photographed. The elevator attachment brackets were present on the elevator and did not exhibit unusual wear or deformation. The elevator command arm torque tube was not present and the structure where the torque tube normally is located exhibited bright and granular fracture surfaces.



Left elevator - upper surface



Left elevator - lower surface



Left elevator - outboard hinge point.



Left elevator - inboard hinge point.





Left elevator root - torque tube structure & separation fracture surfaces.