



# **Aviation Investigation Final Report**

**Location:** Sebastian, Florida **Accident Number:** ERA15LA124

Date & Time: February 9, 2015, 06:15 Local Registration: N30EA

Aircraft: DEHAVILLAND DHC 6 TWIN OTTER Aircraft Damage: Substantial

**Defining Event:** Loss of control on ground **Injuries:** 1 None

Flight Conducted Under: Part 91: General aviation - Positioning

## **Analysis**

A de Havilland DHC-6 Twin Otter airplane, N30EA, collided with another Twin Otter airplane, N70EA, on the runway. The pilot of N30EA reported that, once she started the engines, the airplane rolled forward and to the left 180 degrees because the steering-tiller had been positioned sharply to the left when the airplane was last parked. The pilot stated that, when she applied the brakes, there was no response, and the airplane subsequently collided with the right wing of N70EA. The pilot of N30EA reported that, after the collision, she noted that the hydraulic circuit breaker was open; this would have resulted in insufficient hydraulic pressure to control the parking or pedal brakes. The pilot of N30EA said that she should have noticed that the hydraulic circuit breaker was open before she started the engines because it was part of the Before Starting Engines checklist.

## **Probable Cause and Findings**

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to conduct all of the required items on the Before Starting Engines checklist, which resulted in her failure to detect an open hydraulic circuit breaker and led to insufficient hydraulic pressure to operate the airplane's brakes, her subsequent loss of airplane control, and ground collision with an airplane.

### **Findings**

Personnel issues Use of checklist - Pilot

Personnel issues Aircraft control - Pilot

#### **Factual Information**

#### **History of Flight**

**Standing-engine(s) start-up** Loss of control on ground (Defining event)

Standing-engine(s) start-up Ground collision

On February 9, 2015, at 0615 eastern standard time, N30EA and N70EA, both de Havilland Canada DHC 6 Twin Otters, sustained substantial damage when N30EA collided with N70EA, when the pilot lost control during engine start at the Sebastian Municipal Airport (X26), Sebastian, Florida. The pilot of N30EA and the pilot and mechanic on N70EA were not injured. Both airplanes were registered to and operated by Eagle Air Transport, Ottawa, Illinois. An instrument flight rules flight plan was filed for both airplanes and destined for the Exuma International Airport (MYEF), George Town, Bahamas. Visual meteorological conditions prevailed for the positioning flights conducted under the provisions of 14 Code of Federal Regulations Part 91.

Both airplanes were parked right next to each other (N30EA was to the right of N70EA) and were preparing to depart. The pilot of N30EA reported that she conducted a normal pre-flight inspection of the airplane and the parking brake was "set." After starting both engines, the pilot advanced the throttles (one at a time) to bring the generators on-line. She said the airplane began to move forward and to the left because the steering-tiller had been positioned "sharply" to the left when the airplane was last parked. The pilot said that when she applied the brakes, there was no response and the airplane turned almost 180 degrees as it collided with N70EA, who also had its engines running. A review of postaccident photographs revealed substantial damage to the right wings and engines of both airplanes. The propeller assembly from N70EA's right engine had sheared off and each blade was damaged. The propeller assembly for N30EA remained attached to the engine and each blade was damaged. The area above the cockpit of N30EA was crushed from impact with N70EA's right wing.

The pilot of N30EA reported that after she did an emergency shut-down of the engines; she realized the hydraulic circuit breaker was "pulled." She said she had been told that a mechanic had "pulled" the circuit breaker to bleed down the hydraulic accumulator during maintenance done the night before the accident, which may have resulted in the parking brake and pedal-brakes not having sufficient fluid to operate correctly. However, a review of maintenance logs for N30EA revealed there was no maintenance to the hydraulic system on the airplane prior to the accident. The pilot also stated that she learned after the accident that even though it is not on the checklist, some pilots will pull the hydraulic circuit breaker when shutting down the aircraft to "save a little wear and tear" on the hydraulic pump. It is not known how or why the hydraulic circuit breaker had opened prior to the accident.

According to the airplane's Normal Operating procedures, section 2.1.2, Before Starting Engines checklist, the pilot was to confirm that all circuit breakers were "In". When asked how this accident could have been prevented, the pilot said she, "...should have seen the pulled circuit breaker on the prestart flow."

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The pilot of N70EA stated that he was parked to the left of N30EA and he had just started the engines. He was bringing the generators on-line when the operator's Director of Maintenance (DOM) was boarding the rear of the airplane. The pilot then reached down to turn on the avionics master switch, when N30EA collided with N70EA. He immediately shut down both engines while the DOM exited the airplane.

#### **Pilot Information**

| Commercial  | Age:   | 40  |
|---|--|---|
| Single-engine land; Multi-engine land   | Seat Occupied:   | Left  |
| None  | Restraint Used:  | Unknown   |
| Airplane  | Second Pilot Present:  | No  |
| Airplane multi-engine; Airplane single-engine   | Toxicology Performed:  | No  |
| Class 1 Without waivers/limitations   | Last FAA Medical Exam:   | September 30, 2014  |
| Yes   | Last Flight Review or Equivalent:  | September 4, 2013   |
| 2654 hours (Total, all aircraft), 372 hours (Total, this make and model), 2524 hours (Pilot In Command, all aircraft), 141 hours (Last 90 days, all aircraft), 54 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft) |  |   |
|   | Single-engine land; Multi-engine land  None  Airplane  Airplane multi-engine; Airplane single-engine  Class 1 Without waivers/limitations  Yes  2654 hours (Total, all aircraft), 372 h Command, all aircraft), 141 hours (L | Single-engine land; Multi-engine land  None Restraint Used:  Airplane Second Pilot Present:  Airplane multi-engine; Airplane single-engine  Class 1 Without waivers/limitations  Yes Last Flight Review or Equivalent:  2654 hours (Total, all aircraft), 372 hours (Total, this make and model), 25 Command, all aircraft), 141 hours (Last 90 days, all aircraft), 54 hours (Last |

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# **Aircraft and Owner/Operator Information**

| Aircraft Make:                | DEHAVILLAND                              | Registration:                     | N30EA                    |
|-------------------------------|--|-----------------------------------|--------------------------|
| Model/Series:                 | DHC 6 TWIN OTTER                         | Aircraft Category:                | Airplane                 |
| Year of Manufacture:          | 1968                                     | Amateur Built:                    |                          |
| Airworthiness Certificate:    | Normal                                   | Serial Number:                    | 191                      |
| Landing Gear Type:            | Tricycle                                 | Seats:                            | 1                        |
| Date/Type of Last Inspection: | January 8, 2015 Continuous airworthiness | Certified Max Gross Wt.:          | 10501 lbs                |
| Time Since Last Inspection:   | 32305 Hrs                                | Engines:                          | 2 Turbo prop             |
| Airframe Total Time:          | at time of accident                      | Engine Manufacturer:              | Pratt and Whitney        |
| ELT:                          | Installed, not activated                 | Engine Model/Series:              | PT6A-34                  |
| Registered Owner:             | EAGLE AIR TRANSPORT INC                  | Rated Power:                      | 750 Horsepower           |
| Operator:                     | EAGLE AIR TRANSPORT INC                  | Operating Certificate(s)<br>Held: | On-demand air taxi (135) |
| Operator Does Business As:    |  | Operator Designator Code:         | E2TM                     |

# Meteorological Information and Flight Plan

| Conditions at Accident Site:     | Visual (VMC)           | Condition of Light:                  | Day               |
|----------------------------------|------------------------|--------------------------------------|-------------------|
| Observation Facility, Elevation: | VRB,22 ft msl          | Distance from Accident Site:         | 10 Nautical Miles |
| Observation Time:                | 05:53 Local            | Direction from Accident Site:        | 156°              |
| <b>Lowest Cloud Condition:</b>   |                        | Visibility                           | 10 miles          |
| Lowest Ceiling:                  | Overcast / 9500 ft AGL | Visibility (RVR):                    |                   |
| Wind Speed/Gusts:                | 5 knots /              | Turbulence Type<br>Forecast/Actual:  | / None            |
| Wind Direction:                  | 290°                   | Turbulence Severity Forecast/Actual: | / N/A             |
| Altimeter Setting:               | 29.95 inches Hg        | Temperature/Dew Point:               | -11°C             |
| Precipitation and Obscuration:   |                        |                                      |                   |
| Departure Point:                 | Sebastian, FL (X26)    | Type of Flight Plan Filed:           | IFR               |
| Destination:                     | (MYEF)                 | Type of Clearance:                   | None              |
| Departure Time:                  |                        | Type of Airspace:                    |                   |

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# **Airport Information**

| Airport:             | Sebastian Municipal X26 | Runway Surface Type:             |         |
|----------------------|-------------------------|----------------------------------|---------|
| Airport Elevation:   | 21 ft msl               | <b>Runway Surface Condition:</b> | Unknown |
| Runway Used:         |                         | IFR Approach:                    | None    |
| Runway Length/Width: |                         | VFR Approach/Landing:            | None    |

# Wreckage and Impact Information

| Crew Injuries:         | 1 None | Aircraft Damage:        | Substantial               |
|------------------------|--------|-------------------------|---------------------------|
| Passenger<br>Injuries: |        | Aircraft Fire:          | None                      |
| Ground Injuries:       | N/A    | Aircraft Explosion:     | None                      |
| Total Injuries:        | 1 None | Latitude,<br>Longitude: | 27.815555,-80.469718(est) |

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#### **Administrative Information**

Investigator In Charge (IIC): Yeager, Leah

Additional Participating
Persons:

Original Publish Date: July 13, 2015

Last Revision Date:

Investigation Class: Class

Note: The NTSB did not travel to the scene of this accident.

Investigation Docket: https://data.ntsb.gov/Docket?ProjectID=90702

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 Code of Federal Regulations section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 United States Code section 1154(b)). A factual report that may be admissible under 49 United States Code section 1154(b) is available here.

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# **Aviation Investigation Final Report**

**Location:** Sebastian, Florida **Accident Number:** ERA15LA124

**Date & Time:** February 9, 2015, 06:15 Local **Registration:** N70EA

Aircraft: DEHAVILLAND DHC 6 200 Aircraft Damage: Substantial

**Defining Event:** Loss of control on ground **Injuries:** 2 None

Flight Conducted Under: Part 91: General aviation - Positioning

## **Analysis**

A de Havilland DHC-6 Twin Otter airplane, N30EA, collided with another Twin Otter airplane, N70EA, on the runway. The pilot of N30EA reported that, once she started the engines, the airplane rolled forward and to the left 180 degrees because the steering-tiller had been positioned sharply to the left when the airplane was last parked. The pilot stated that, when she applied the brakes, there was no response, and the airplane subsequently collided with the right wing of N70EA. The pilot of N30EA reported that, after the collision, she noted that the hydraulic circuit breaker was open; this would have resulted in insufficient hydraulic pressure to control the parking or pedal brakes. The pilot of N30EA said that she should have noticed that the hydraulic circuit breaker was open before she started the engines because it was part of the Before Starting Engines checklist.

## **Probable Cause and Findings**

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The failure of the other airplane pilot to conduct all of the required items on the Before Starting Engines checklist, which resulted in her failure to detect an open hydraulic circuit breaker and led to insufficient hydraulic pressure to operate the airplane's brakes, her subsequent loss of airplane control, and ground collision with an airplane.

# Findings

| Personnel issues | Use of checklist - Pilot of other aircraft |
|------------------|--|
| Personnel issues | Aircraft control - Pilot of other aircraft |

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#### **Factual Information**

#### **History of Flight**

Standing-engine(s) not oper

Ground collision

On February 9, 2015, at 0615 eastern standard time, N30EA and N70EA, both DeHavilland DH 6 Twin Otters, sustained substantial damage when N30EA collided with N70EA, when it lost control during engine start at the Sebastian Municipal Airport (X26), Sebastian, Florida. The pilot of N30EA and the pilot and mechanic on N70EA were not injured. Both airplanes were registered to and operated by Eagle Air Transport, Ottawa, Illinois. An instrument flight rules flight plan was filed for both airplanes and destined for the Exuma International Airport (MYEF), George Town, Bahamas. Visual meteorological conditions prevailed for the positioning flight conducted under the provisions of 14 Code of Federal Regulations Part 91.

Both airplanes were parked right next to each other (N30EA was to the right of N70EA) and were preparing to depart. The pilot of N30EA reported that she conducted a normal pre-flight inspection of the airplane and the parking brake was "set." After starting both engines, the pilot advanced the throttles (one at a time) to bring the generators on-line. She said the airplane began to move forward and to the left because the steering-tiller had been positioned "sharply" to the left when the airplane was last parked. The pilot said that when she applied the brakes, there was no response and the airplane turned almost 180 degrees as it collided with N70EA, who also had its engines running. A review of postaccident photographs revealed substantial damage to the right wings and engines of both airplanes. The propeller assembly from N70EA's right engine had sheared off and each blade was damaged. The propeller assembly for N30EA remained partially attached to the engine and each blade was damaged. The area above the cockpit of N30EA was crushed from impact with N70EA's right wing.

The pilot of N30EA reported that after she did an emergency shut-down of the engines; she realized the hydraulic circuit breaker was "pulled." She said she had been told that a mechanic had "pulled" the circuit breaker to bleed down the hydraulic accumulator during maintenance done the night before the accident, which may have resulted in the parking brake and pedal-brakes not having sufficient fluid to operate correctly. However, a review of maintenance logs for N30EA revealed there was no maintenance to the hydraulic system on the airplane prior to the accident. The pilot also stated that she learned after the accident that even though it is not on the checklist, some pilots will pull the hydraulic circuit breaker when shutting down the aircraft to "save a little wear and tear" on the hydraulic pump. It is not known how or why the hydraulic circuit breaker had opened prior to the accident.

According to the airplane's Normal Operating procedures, section 2.1.2, Before Starting Engines checklist, the pilot was to confirm that all circuit breakers were "In". When asked how this accident could have been prevented, the pilot said she, "...should have seen the pulled circuit breaker on the prestart flow."

The pilot of N70EA stated that he was parked to the left of N30EA and he had just started the engines. He was bringing the generators on-line when the operator's Director of Maintenance (DOM) was boarding the rear of the airplane. The pilot then reached down to turn on the avionics master switch,

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when N30EA collided with N70EA. He immediately shut down both engines while the DOM exited the rear of the airplane.

### **Pilot Information**

| Certificate:              | Commercial   | Age:                                   | 54                     |
|---------------------------|--|--|------------------------|
| Airplane Rating(s):       | Single-engine land; Multi-engine land                | Seat Occupied:                         | Left                   |
| Other Aircraft Rating(s): | None   | Restraint Used:                        | Unknown                |
| Instrument Rating(s):     | Airplane   | Second Pilot Present:                  | No                     |
| Instructor Rating(s):     | Airplane multi-engine; Airplane single-engine        | Toxicology Performed:                  | No                     |
| Medical Certification:    | Class 2 With waivers/limitations                     | Last FAA Medical Exam:                 | February 21, 2015      |
| Occupational Pilot:       | Yes  | Last Flight Review or Equivalent:      |                        |
| Flight Time:              | 5000 hours (Total, all aircraft), 550 hall aircraft) | nours (Total, this make and model), 10 | 2 hours (Last 90 days, |

## **Aircraft and Owner/Operator Information**

| •                             |                         |                                   |                          |
|-------------------------------|-------------------------|-----------------------------------|--------------------------|
| Aircraft Make:                | DEHAVILLAND             | Registration:                     | N70EA                    |
| Model/Series:                 | DHC 6 200               | Aircraft Category:                | Airplane                 |
| Year of Manufacture:          |                         | Amateur Built:                    |                          |
| Airworthiness Certificate:    | Normal                  | Serial Number:                    | 139                      |
| Landing Gear Type:            | Tricycle                | Seats:                            |                          |
| Date/Type of Last Inspection: | Unknown                 | Certified Max Gross Wt.:          |                          |
| Time Since Last Inspection:   |                         | Engines:                          | 2 Turbo prop             |
| Airframe Total Time:          |                         | Engine Manufacturer:              | Pratt and Whitney        |
| ELT:                          | Installed               | Engine Model/Series:              | PT6A-34                  |
| Registered Owner:             | EAGLE AIR TRANSPORT     | Rated Power:                      | 750 Horsepower           |
| Operator:                     | EAGLE AIR TRANSPORT INC | Operating Certificate(s)<br>Held: | On-demand air taxi (135) |
| Operator Does Business As:    |                         | Operator Designator Code:         | E2TM                     |

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## Meteorological Information and Flight Plan

| Conditions at Accident Site:     | Visual (VMC)           | Condition of Light:                  | Day               |
|----------------------------------|------------------------|--------------------------------------|-------------------|
| Observation Facility, Elevation: | VRB,22 ft msl          | Distance from Accident Site:         | 10 Nautical Miles |
| Observation Time:                | 05:53 Local            | Direction from Accident Site:        | 156°              |
| <b>Lowest Cloud Condition:</b>   |                        | Visibility                           | 10 miles          |
| Lowest Ceiling:                  | Overcast / 9500 ft AGL | Visibility (RVR):                    |                   |
| Wind Speed/Gusts:                | 5 knots /              | Turbulence Type<br>Forecast/Actual:  | / None            |
| Wind Direction:                  | 290°                   | Turbulence Severity Forecast/Actual: | / N/A             |
| Altimeter Setting:               | 29.95 inches Hg        | Temperature/Dew Point:               | -11°C             |
| Precipitation and Obscuration:   |                        |                                      |                   |
| Departure Point:                 | Sebastian, FL (X26)    | Type of Flight Plan Filed:           | IFR               |
| Destination:                     | (MYEF)                 | Type of Clearance:                   | None              |
| Departure Time:                  |                        | Type of Airspace:                    |                   |

# **Airport Information**

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| Runway Used:         |                         | IFR Approach:                    | None    |
| Runway Length/Width: |                         | VFR Approach/Landing:            | None    |

# Wreckage and Impact Information

| Crew Injuries:         | 1 None | Aircraft Damage:        | Substantial               |
|------------------------|--------|-------------------------|---------------------------|
| Passenger<br>Injuries: | 1 None | Aircraft Fire:          | None                      |
| Ground Injuries:       | N/A    | Aircraft Explosion:     | None                      |
| Total Injuries:        | 2 None | Latitude,<br>Longitude: | 27.815555,-80.469718(est) |

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#### **Administrative Information**

Investigator In Charge (IIC): Yeager, Leah

Additional Participating
Persons:

Original Publish Date: July 13, 2015

Last Revision Date:

Investigation Class: Class

Note: The NTSB did not travel to the scene of this accident.

Investigation Docket: https://data.ntsb.gov/Docket?ProjectID=90702

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