



# Aviation Investigation Final Report

---

<b>Location:</b>	Cameron, Louisiana	<b>Accident Number:</b>	GAA16CA039
<b>Date &amp; Time:</b>	October 30, 2015, 12:20 Local	<b>Registration:</b>	N420PH
<b>Aircraft:</b>	Bell 407	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Part(s) separation from AC	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 135: Air taxi & commuter - Non-scheduled		

---

## Analysis

The operator reported that the pilot landed and shutdown the helicopter on an offshore platform. He secured the main rotor system by attaching a tiedown to the forward left main rotor blade and he then attached this tiedown to the left front skid cross tube. Several hours later, the pilot entered the right front seat to begin the engine start sequence. The operator reported that the pilot proceeded to start the engine and noted a few seconds after initiating the engine start that the helicopter made an "unusual noise" and began to shake. The pilot then shut down the helicopter without further incident. A postflight inspection revealed substantial damage to the blue main rotor blade.

The operator reported there were no pre-impact mechanical failures or malfunctions with the airframe or engine 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 remove a main rotor blade tiedown, which resulted in substantial damage to a main rotor blade when the engine was started.

## Findings

---

<b>Personnel issues</b>	Preflight inspection - Pilot
<b>Personnel issues</b>	Forgotten action/omission - Pilot
<b>Personnel issues</b>	Use of checklist - Pilot

## Factual Information

### History of Flight

<b>Prior to flight</b>	Preflight or dispatch event
<b>Standing-engine(s) start-up</b>	Aircraft structural failure
<b>Standing-engine(s) start-up</b>	Part(s) separation from AC (Defining event)

### Pilot Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	49, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane; Helicopter	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Helicopter	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	September 10, 2015
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	June 21, 2015
<b>Flight Time:</b>	3104 hours (Total, all aircraft), 313 hours (Total, this make and model), 1918 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 36 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Bell	<b>Registration:</b>	N420PH
<b>Model/Series:</b>	407 NO SERIES	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	2007	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	53747
<b>Landing Gear Type:</b>	N/A; Emergency float; High skid	<b>Seats:</b>	7
<b>Date/Type of Last Inspection:</b>	December 17, 2014 AAIP	<b>Certified Max Gross Wt.:</b>	5250 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Turbo shaft
<b>Airframe Total Time:</b>	9015.86 Hrs at time of accident	<b>Engine Manufacturer:</b>	Rolls-Royce
<b>ELT:</b>	C126 installed, not activated	<b>Engine Model/Series:</b>	250-C47B
<b>Registered Owner:</b>	PHI INC.	<b>Rated Power:</b>	630 Horsepower
<b>Operator:</b>	PHI INC.	<b>Operating Certificate(s) Held:</b>	Rotorcraft external load (133), On-demand air taxi (135), Agricultural aircraft (137)

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KVBS,735 ft msl	<b>Distance from Accident Site:</b>	11 Nautical Miles
<b>Observation Time:</b>	17:15 Local	<b>Direction from Accident Site:</b>	300°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	13 knots / 20 knots	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>	180°	<b>Turbulence Severity Forecast/Actual:</b>	/ N/A
<b>Altimeter Setting:</b>	29.92 inches Hg	<b>Temperature/Dew Point:</b>	24°C / 23°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Cameron, LA (149 )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Cameron, LA (167 )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	08:41 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	West Cameron 167 167	<b>Runway Surface Type:</b>	Metal/wood
<b>Airport Elevation:</b>	0 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	29.390556,-93.446113(est)

## Preventing Similar Accidents

Flight Control Locks (SA-048)

### The Problem

Accidents have occurred after pilots omitted seemingly obvious procedures, such as removing flight control locks and performing flight control checks before takeoff. Errors of omission are frequently associated with interruptions, distractions, time pressures, divided attention, and complacency about standard operating procedures (SOPs).

### What can you do?

- Pilots of all experience levels should follow SOPs and use checklists, which serve as a memory aid to help counteract human performance vulnerabilities. Do not rely on memory alone.
- Recognize that procedural omissions are also common in many other types of accidents, including those involving gear-up landings, fuel starvation, incorrect fuel pump settings, and flap misconfigurations.
- Be prepared to abort the takeoff if something does not seem right. When a pilot is confronted with a sudden, abnormal event, responses are more likely to be delayed or inappropriate. Having a plan will help reduce reaction time and can result in a safer response.
- When flying alone, read the checklist aloud and touch the applicable switch or control. Research has shown that touching an object while verbally communicating enhances the probability that an activity has been accomplished.
- Avoid using improvised control lock devices that may be inconspicuous and easily overlooked during preflight checks.

See <https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-048.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

<b>Investigator In Charge (IIC):</b>	Hodges, Michael
<b>Additional Participating Persons:</b>	Keith J Kibodeaux; FAA Baton Rouge FSDO; Baton Rouge , LA
<b>Original Publish Date:</b>	February 8, 2016
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	This accident report documents the factual circumstances of this accident as described to the NTSB.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=92283">https://data.nts.gov/Docket?ProjectID=92283</a>

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](#).