



National Transportation Safety Board Aviation Accident Final Report

Location:	Honolulu, HI	Accident Number:	LAX05LA221
Date & Time:	07/01/2005, 1059 HST	Registration:	N3369P
Aircraft:	Piper PA-23-160	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

The airplane veered off the runway and collided with a taxiway light during a single engine landing, and the landing gear collapsed. The left engine could not be restarted following a practice shutdown and feather. Because the hydraulic pump is located on the left engine, the certified flight instructor was aware that the landing gear would have to be manually extended. They elected to return to the departure airport while the private pilot undergoing instruction flew an instrument landing system approach. The private pilot positioned the landing gear lever in the down position and pulled out the gear pump. The instructor did not verify the landing gear lever's position and pumped the handle about 10 to 20 times but was not successful in getting a down-and-locked indication in the landing gear lights, nor did the landing gear selector handle return to the neutral position. The instructor continued troubleshooting the airplane; however, the gear down-and-locked lights did not illuminate on any of the gear. The air traffic control tower (ATCT) gave the airplane an instruction to conduct a 360-degree right turn at 500 feet above ground level (agl). Prior to the entry into the turn, the instructor was considering the use of the Emergency Gear Extender; however, upon entry into the turn, control of the airplane demanded his full attention. As they rolled out from the turn, the instructor asked the controller to confirm that the landing gear appeared to be down. They replied affirmatively and the instructor took complete control of the airplane. Just prior to the airplane's entry into the flare, someone blind transmitted over the radio that the nose gear did not appear down. The instructor then applied power and the airplane rolled to the left and then impacted the ground. According to the Piper Apache owner's handbook, the hydraulic pump is located on the left engine. In the event of a power loss on the left engine, the hydraulic pump is rendered unusable. In order to obtain hydraulic pressure in the event of a hydraulic pump failure or left engine failure, the emergency pump handle should be extended and 30 to 40 pumps are required to raise or lower the landing gear. Upon full extension or retraction, the pump handle will position itself back into the neutral position. In the event of a hydraulic system failure caused by a line breakage or a selector valve malfunctioning, the gear can be extended using the Emergency Gear Extender. When this control is pulled, carbon dioxide flows from a cylinder under the floorboards and assists in extending the gear. The Emergency Gear Extender control is located beneath a small cover plate underneath the left pilot's seat. Post accident examination of the airplane and landing gear system showed that the

landing gear lever was positioned close to the neutral position, rather than in the down position. The emergency landing gear system was actuated through the hand pump and extended into the down-and-locked position with no operational anomalies noted.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the flight crew's failure to ensure that the landing gear lever was in the full down position prior to utilizing the hand pump, and the certified flight instructor's failure to utilize the blow down emergency landing gear system. The instructor's inadequate supervision of the flight and failure to maintain Vmc during an attempted go-around was also causal.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE

Findings

1. HYDRAULIC SYSTEM,PUMP - INOPERATIVE
2. LANDING GEAR,NORMAL RETRACTION/EXTENSION ASSEMBLY - INOPERATIVE
3. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND(CFI)
4. (C) EMERGENCY PROCEDURE - IMPROPER USE OF - PILOT IN COMMAND(CFI)
5. (C) SUPERVISION - INADEQUATE - PILOT IN COMMAND(CFI)

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

6. (C) AIRSPEED(VMC) - NOT MAINTAINED - PILOT IN COMMAND(CFI)
7. (C) DIRECTIONAL CONTROL - NOT MAINTAINED - PILOT IN COMMAND(CFI)

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

8. TERRAIN CONDITION - GROUND

Factual Information

On July 1, 2005, at 1059 Hawaiian standard time, a PA-23-160, N3369P, veered off the runway during a single engine landing, and the landing gear collapsed at the Honolulu International Airport, Honolulu, Hawaii. During the veer from the runway, the left wing impacted a taxiway light. The certified flight instructor (CFI) and private pilot undergoing instruction (PUI) were not injured; the airplane sustained substantial damage. The CFI was operating the privately registered airplane under the provisions of 14 CFR Part 91. Visual meteorological conditions prevailed, and no flight plan had been filed. The airplane departed from the Honolulu airport about 1015 for the local area instructional flight.

According to the CFI, the left engine could not be restarted following a practice shutdown and feather. Because the hydraulic pump is located on the left engine, the CFI was aware that the landing gear would have to be manually extended. They elected to return to the departure airport and performed the emergency landing gear extension procedures by pumping the handle about 10 to 20 times. They did not receive a down-and-locked landing gear indication of any of the three green lights, nor did the landing gear lever return to the neutral position. While on final approach, the tower controller stated that the gear appeared down-and-locked. The CFI proceeded inbound for landing. On short final, an unidentified aircraft reported on the tower frequency that the nose gear was not down-and-locked. Due to the single engine operation, the CFI did not think that it was feasible to perform a go-around so he landed the airplane on runway 4R. Upon touchdown, the airplane veered to the left and approximately 4 feet of the outboard left wing sheared off when it impacted a taxiway light. During the approach to landing, the pilot elected not to use the Emergency Gear Extender because he did not feel comfortable having the PUI fly the airplane single engine while he applied the Emergency Gear Extender control.

The CFI had performed the emergency gear extension procedure on one other occasion. During that incident, the landing gear lever did not return to the neutral position; however, the three green lights indicating that the gear was down-and-locked illuminated.

In a later written statement, the CFI reported that after securing the left engine, they decided to return to Honolulu. He advised the air traffic approach controller that he had a feathered engine and could not restart it. His PUI flew the airplane while performing an instrument landing system (ILS) 4R approach. At 1,500 feet above ground level (agl) and 6 miles from the airport, the PUI lowered the gear lever and pulled out the hand pump. As the PUI flew the approach, the CFI began pumping the hand pump and completed 10 to 20 strokes before he could no longer move the pump. The CFI saw the nose gear in the mirror (mounted on the engine cowlings); however, none of the green lights illuminated, and the gear lever did not pop back into the neutral position.

The accident flight was the fourth occasion in this airplane that the CFI was required to activate the hand pump due to a faulty landing gear system. On the previous occasions, he pumped the handle 30 to 40 strokes until no further pumping was possible. On each of the three incidents, the three gear lights illuminated but the gear lever did not return to the neutral position. On all occasions including the accident flight, the same sensation of stiffness on the hand pump was experienced.

The CFI continued troubleshooting the airplane and they rapidly "pitched and yawed" the airplane, attempting to position the gear down-and-locked. As the CFI was going to ask the

tower if the gear appeared down and considering using the Emergency Gear Extender, the air traffic control tower (ATCT) gave the airplane a 360-degree right turn at 500 feet agl. The CFI said that about halfway through the turn "we began flirting with Vmc." The PUI continued to fly the airplane but the CFI also was on the yoke because he recognized this as a critical phase of flight. He did not decline the 360-degree turn given by the ATCT because he was focused on the gear, and as a CFI in the area for over 3 years, he has been under constant pressure to accommodate ATCT instructions.

As they rolled out from the turn, the CFI asked the ATCT to confirm that the landing gear appeared to be down. They replied affirmatively and the CFI took complete control of the airplane. Just prior to the airplane's entry into the flare, someone blind transmitted over the radio that the nose gear did not appear down. The CFI then reactively applied power and the airplane rolled to the left and then impacted the ground.

In the PUI's written statement, she noted that her checkride had been scheduled for the end of March but had been canceled due to a series of mechanical problems involving the landing gear on the airplane. During their return to the airport, the PUI flew the airplane and the CFI provided instruction on conducting a single engine instrument landing system (ILS) approach in visual meteorological conditions. While on the final approach leg following the 360-degree turn, the CFI assumed control of the airplane and the PUI relinquished her control.

According to the Piper Apache owner's handbook, the hydraulic pump is located on the left engine. In the event of a power loss on the left engine, the hydraulic pump is rendered unusable. In order to obtain hydraulic pressure in the event of a hydraulic pump failure or left engine failure, the emergency pump handle should be extended and 30 to 40 pumps are required to raise or lower the landing gear. Upon full extension or retraction, the pump handle will position itself into the neutral position. In the event of a hydraulic system failure caused by a line breakage or a selector valve malfunctioning, the gear can be extended using the Emergency Gear Extender. When this control is pulled, carbon dioxide flows from a cylinder under the floorboards and assists in extending the gear. The Emergency Gear Extender control is located beneath a small cover plate underneath the left pilot's seat.

On July 14, the FAA coordinator and an FAA airworthiness inspector examined the landing gear with an aviation maintenance technician and performed a functional check. The inspectors noted that the landing gear lever was positioned close to the neutral position. Interviews with the CFI and PUI indicated that the PUI placed the lever in the down position but that the CFI did not verify its position. With the airplane on jacks, the emergency landing gear system was actuated through the hand pump and extended into the down-and-locked position with no operational anomalies noted.

Flight Instructor Information

Certificate:	Airline Transport; Flight Instructor; Commercial	Age:	32, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 With Waivers/Limitations	Last FAA Medical Exam:	02/01/2005
Occupational Pilot:		Last Flight Review or Equivalent:	05/01/2004
Flight Time:	2750 hours (Total, all aircraft), 260 hours (Total, this make and model), 2640 hours (Pilot In Command, all aircraft), 180 hours (Last 90 days, all aircraft), 43 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student Pilot Information

Certificate:	Private	Age:	24, Female
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without Waivers/Limitations	Last FAA Medical Exam:	03/01/2005
Occupational Pilot:		Last Flight Review or Equivalent:	05/01/2004
Flight Time:	289 hours (Total, all aircraft), 49 hours (Total, this make and model), 195 hours (Pilot In Command, all aircraft), 12 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N3369P
Model/Series:	PA-23-160	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	23-1326
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	05/01/2005, 100 Hour	Certified Max Gross Wt.:	3500 lbs
Time Since Last Inspection:	13 Hours	Engines:	2 Reciprocating
Airframe Total Time:	4101.4 Hours as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320
Registered Owner:	Dan Uechi	Rated Power:	150 hp
Operator:	Peter Miller	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	HNL, 13 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1317 HST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 3400 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	13 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	70°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.06 inches Hg	Temperature/Dew Point:	29° C / 18° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Honolulu, HI (HNL)	Type of Flight Plan Filed:	None
Destination:	(HNL)	Type of Clearance:	VFR
Departure Time:	1015 HST	Type of Airspace:	

Airport Information

Airport:	Honolulu International (HNL)	Runway Surface Type:	Asphalt
Airport Elevation:	13 ft	Runway Surface Condition:	Dry
Runway Used:	4R	IFR Approach:	ILS; Practice
Runway Length/Width:	9000 ft / 150 ft	VFR Approach/Landing:	Full Stop

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	21.318611, -157.922222

Administrative Information

Investigator In Charge (IIC):	Kristi Dunks	Report Date:	05/30/2006
Additional Participating Persons:	David Lusk; Federal Aviation Administration; Honolulu, HI		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.ntsbt.gov/pubdms/ .		

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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](#).