National Transportation Safety Board
Aviation Accident Final Report

Location:	Longmont, CO	**Accident Number:**	DEN07LA122
Date & Time:	07/19/2007, 0900 MDT	**Registration:**	N9562Z
Aircraft:	Beech C-45H	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

During the instructional flight, the instructor shut down the right engine and feathered the propeller. It was subsequently restarted, but the left engine started running rough and began to vibrate. The left engine was shut down and the propeller feathered. Level flight was maintained from power produced by the right engine. The left engine was then restarted but instead of producing thrust, the engine produced more drag so it was secured again. Then the right engine began losing power. Full power was applied but the airplane continued to descend. The instructor lowered the landing gear and while in-transit, the airplane clipped the tops of trees. He was able to guide the airplane between two houses and impacted an open field. The airplane bounced across the road, struck a power pole, and caught fire. The two pilots evacuated the airplane via the main cabin door. Examination at the airport of departure disclosed two pools of oil at the approximate positions of the two engines. There were two trails of oil leading from the parking spot down the taxiway and onto the runway. Both engines were partially disassembled and examined. There was evidence that both engines had failed catastrophically due to oil starvation. The left engine crankshaft was broken and all the piston heads were at the tops of their cylinders. Pieces of metal were recovered from the right engine oil sump. According to the operator, the engine rocker box recovery system must be drained during preflight to avoid hydraulic lock. The instructor stated that when they preflighted the airplane, the drain valves were open (the drained oil is captured and recycled). He thought they had closed both valves. According to the operator, either the pilot's failed to close the drain valves or they were jammed in the open position. The operator said the latter was unlikely "because you can feel it move when you close it."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The instructor pilot's improper preflight in that he failed to close the rocker box recovery

system drain valves, resulting in a total loss of lubricating oil and subsequent oil starvation to both engines. A contributing factor was the trees.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: MANEUVERING

Findings
1. (C) AIRCRAFT PREFLIGHT - IMPROPER - PILOT IN COMMAND
2. (C) LUBRICATING SYSTEM,OIL QUICKDRAIN/DRAIN PLUG - NOT SECURED
3. (C) FLUID,OIL - STARVATION
4. ALL ENGINES - FAILURE,TOTAL

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH

Findings
5. (F) OBJECT - TREE(S)
6. OBJECT - UTILITY POLE

Factual Information

On July 19, 2007, approximately 0900 mountain daylight time, a Beech C-45H, N9562Z, piloted by an airline transport-certificated pilot, was destroyed when it struck trees and impacted terrain following a dual engine loss of power while maneuvering near Longmont, Colorado. Visual meteorological conditions prevailed at the time of the accident. The local instructional flight was being conducted under the provisions of Title 14 CFR Part 91 without a flight plan. The airline transport (ATP) certificated instructor pilot was seriously injured, and the ATP pilot receiving instruction received minor injuries. The flight originated at Platte Valley Airpark (18V), Hudson, Colorado, approximately 0845, and was en route to Boulder Airport (1V5) Boulder, Colorado.

A witness pbserved the airplane flying at low level about 200 feet and descending. It made a turn to the west, leveled off, then descended sharply. The engines appeared to be "stopped." The airplane flew between two large trees, clipping the left tree. The airplane then impacted an open field. Upon impact with the ground, both engines separated from the airframe. The airplane slid across the field, struck a power pole, slid across a road, and came to rest. There was a post-impact fire

According to accident reports submitted by the two pilots, they had planned to fly to Boulder, Colorado, and while en route, they would practice abnormal and emergency procedures. They spent about 1-1/2 hours preflighting the airplane, then departed Platte Valley Airport. During the flight, the right engine was shut down and the propeller feathered. It was subsequently restarted, but the left engine started "running very rough suddenly, and vibrated excessively." The left engine was shut down and the propeller feathered. Level flight was maintained from power produced by the right engine. "Thinking the left engine might still be able to produce thrust, we restarted the left engine," the instructor wrote. Instead of producing thrust, the engine produced more drag so it was secured again. Then the right engine began losing power. Full power was applied but the airplane continued to descend. The instructor's intention was to land on Niwot Road or in the adjacent field. He lowered the landing gear and while the gear was in-transit, the airplane clipped the tops of trees. The instructor was able to guide the airplane between two houses. It impacted an open field, slid 310 feet before bouncing across County Line Road, struck and downed a power pole, and slid another 40 feet before coming to a stop. There was a post-impact fire. The two pilots evacuated the airplane via the main cabin door. The airplane came to rest in the southwest corner of the intersection of County Line Road and Niwot Road (County Road 16).

Upon hearing of the accident, the mechanic who maintained the airplane went out to where the airplane had been parked. There were two pools of oil in the run-up area, and trails of oil led out onto the runway.

The airplane was recovered and transported to Beegles Aircraft Services, Greeley, Colorado, where, on July 24, 2007, both engines were partially disassembled and examined. There was evidence indicating both engines had failed catastrophically due to oil starvation. The left engine crankshaft was broken and all the piston heads were at the tops of their cylinders. Pieces of metal, including pieces of piston rings, were recovered from the right engine oil sump.

According to the airplane operator, Commemorative Air Force, the drain valve in the Engine Rocker Box Recovery System (Saf-Air oil drain valve p/n 00880), used to prevent hydraulic lock and minimize oil clean-up, is opened when the collection vessel is attached after flight.

During preflight, the recovery vessel is removed and the valve closed. The internal barrel of the Saf-Air lock open oil drain valve on the left engine was found in the nearly closed position, and the internal barrel on the right engine was in the open position. The open/close lock control on the valves is on the external part of the valves and these external parts were sheared off both engines at impact. According to FAA's airworthiness inspector, the drains are not approved for installation in the Pratt & Whitney R-985 engines (as installed on the Beech C-45).

The pilot was later interviewed by telephone. He stated that when they preflighted the airplane, the drain valves were open (the drained oil is captured and recycled). He thought they had closed both valves. According to the Commemorative Air Force, either the pilot failed to close the drain valves or they were jammed in the open position, but the latter would be unlikely "because you can feel the valve move when you close it."

Flight Instructor Information

Certificate:	Airline Transport; Flight Instructor	**Age:**	64, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	**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 2 With Waivers/Limitations	**Last FAA Medical Exam:**	08/01/2006
Occupational Pilot:		**Last Flight Review or Equivalent:**	05/01/2006
Flight Time:	15000 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial; Flight Engineer	**Age:**	52, Male
Airplane Rating(s):	Multi-engine Land; 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):	Airplane Multi-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 With Waivers/Limitations	**Last FAA Medical Exam:**	05/01/2007
Occupational Pilot:		**Last Flight Review or Equivalent:**	04/01/2007
Flight Time:	20000 hours (Total, all aircraft), 13 hours (Total, this make and model), 7400 hours (Pilot In Command, all aircraft), 110 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N9562Z
Model/Series:	C-45H	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	AF-12
Landing Gear Type:	Retractable - Tailwheel	**Seats:**	6
Date/Type of Last Inspection:	05/01/2007, Annual	**Certified Max Gross Wt.:**	9300 lbs
Time Since Last Inspection:	15 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:	3925 Hours at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed	**Engine Model/Series:**	R-985
Registered Owner:	American Airpower Heritage Flying Museum	**Rated Power:**	450 hp
Operator:	American Airpower Heritage Flying Museum	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	BJC, 5670 ft msl	**Distance from Accident Site:**	17 Nautical Miles
Observation Time:	0940	**Direction from Accident Site:**	171°
Lowest Cloud Condition:	Scattered / 1400 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	Broken / 2600 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.25 inches Hg	**Temperature/Dew Point:**	22°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hudson, CO (18V)	**Type of Flight Plan Filed:**	None
Destination:	Boulder, CO (1V5)	**Type of Clearance:**	None
Departure Time:	0845 MDT	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious, 1 Minor	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	40.119444, -105.055556

Administrative Information

Investigator In Charge (IIC):	Arnold W Scott	**Report Date:**	09/27/2007
Additional Participating Persons:	Mark L Schmidt; FAA Flight Standards District Office; Denver, CO		
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.ntsb.gov/pubdms/.		