



Aviation Investigation Final Report

Location:	UKIAH, California	Accident Number:	LAX96TA298
Date & Time:	August 7, 1996, 09:00 Local	Registration:	N499DF
Aircraft:	Bell UH-1H	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The helicopter was being used on a training flight with a commercial rated (student) pilot and a flight instructor (CFI) aboard. During a straight-in autorotation, the student made a 'very gradual' flare and allowed the helicopter to descend to approximately 10 feet agl before she began rolling on the throttle. As she rolled on the throttle, she inadvertently made an abrupt aft cyclic control movement. The tail rotor and stinger then struck the ground before the CFI could regain control. The CFI stabilized the helicopter in about a 3 to 4 foot hover and noticed a vibration. As he was setting the helicopter down, the vibration became worse. During shutdown the tail rotor and tailrotor gearbox separated from the tailboom. The commercial (student) pilot's current qualification card had been issued with the provision that she receive additional training and take a reevaluation check ride. After the accident, the pilot spent 2 weeks with the Army National Guard, where she received additional training in the UH-1H helicopter. A conversation between the CDF safety officer and the National Guard instructor pilot indicated that the student continued to have difficulty with aircraft control.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the commercial/student pilot's improper/abrupt use of aft cyclic during the flare, and the instructor's inadequate supervision of the flight.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. AUTOROTATION - INITIATED
2. (C) FLARE - IMPROPER - DUAL STUDENT
3. (C) SUPERVISION - INADEQUATE - PILOT IN COMMAND(CFI)
4. REMEDIAL ACTION - NOT ATTAINED - PILOT IN COMMAND(CFI)

Factual Information

On August 7, 1996, at 0900 hours Pacific daylight time, a Bell UH-1H, N499DF, collided with the runway while performing a practice autorotation at Ukiah Municipal Airport, Ukiah, California. The aircraft sustained substantial damage; however, neither the flight instructor nor his commercial student was injured. The aircraft was being operated as an instructional flight by the California Department of Forestry. The flight originated in Willits, California, at 0745. Visual meteorological conditions prevailed and a company VFR flight plan had been filed.

According to the statements of both pilots, after first practicing a few confined area and slope landings, they flew to the Ukiah Airport. At Ukiah the instructor conducted emergency procedure training, which consisted mainly of autorotations terminating with power recoveries. He felt that the pilot had been having difficulty maintaining situational awareness during the previous confined area operations.

The training continued with a series of straight in autorotations, with the touchdown point planned to be about midfield on runway 15. During the first three or four autorotations, the instructor pilot had to take control of the collective because she allowed the N2 to overspeed. She was also having problems with aircraft control, primarily during flare, initial pitch application, and recovery. The instructor estimated they had performed 10 to 15 straight in autorotations prior to the accident.

During the final autorotation, the instructor described her flare as "very gradual." She had allowed the aircraft to descend to approximately 10 feet agl, with the aircraft was still in a near level attitude, when she began a power recovery. As she was rolling on the throttle, she inadvertently made an abrupt aft cyclic control movement. The stinger and tail rotor struck the ground before the instructor could regain control.

After the tail rotor strike, the instructor stabilized the aircraft at a 3- to 4-foot hover. When he checked the controls he noticed a vibration and realized the aircraft had been damaged. He had hovered off the east side of runway 15 and was setting the aircraft down when the vibration became worse. During the aircraft shutdown, the tail rotor and tail rotor gearbox separated from the tailboom. The crew exited the aircraft without further incident.

Fresh scrapes and gouges were observed on the runway surface. The left- and right-hand synchronized elevator, as well as the tail boom vertical fin and spar, had structural damage. The second stage power turbine wheel exhibited foreign object damage (FOD) on two blades. A tail rotor control tube and a synchronized elevator control tube also exhibited damage.

The pilot had previously received 5.4 hours of initial training from the instructor between June 25 and June 27, 1996. On June 28, 1996, the pilot received a check ride from the CDF air

operations officer. A pilot qualification card was issued with the provision that she receive additional training and a reevaluation check ride.

The pilot then went on 2 weeks active duty for training (ADT) with the California Army National Guard at Los Alamitos AAF where she received additional training in the UH-1H helicopter. A telephone conversation between the CDF safety officer and her National Guard instructor pilot indicated that the pilot continued to have difficulties with aircraft control.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	43, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine; Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	January 23, 1996
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	7470 hours (Total, all aircraft), 6502 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N499DF
Model/Series:	UH-1H UH-1H	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	71-20022
Landing Gear Type:	Skid	Seats:	11
Date/Type of Last Inspection:	July 11, 1996 AAIP	Certified Max Gross Wt.:	10200 lbs
Time Since Last Inspection:	52 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	3742 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	T53-L-703
Registered Owner:	CALIFORNIA DEPT. OF FORESTRY	Rated Power:	1485 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	UKI ,614 ft msl	Distance from Accident Site:	
Observation Time:	09:00 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	25 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:	0°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	20°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	WILLITS , CA	Type of Flight Plan Filed:	Company VFR
Destination:	(UKI)	Type of Clearance:	None
Departure Time:	07:45 Local	Type of Airspace:	Class E

Airport Information

Airport:	UKIAH MUNICIPAL UKI	Runway Surface Type:	Asphalt
Airport Elevation:	614 ft msl	Runway Surface Condition:	Dry
Runway Used:	15	IFR Approach:	None
Runway Length/Width:	4415 ft / 150 ft	VFR Approach/Landing:	Simulated forced landing;Stop and go;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	39.120174,-123.279983(est)

Administrative Information

Investigator In Charge (IIC):	Crispin, Robert
Additional Participating Persons:	RICK MAYFIELD; OAKLAND , CA
Original Publish Date:	October 31, 1997
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=29578

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