Aviation Investigation Final Report

Location:	Tracy, California	**Accident Number:**	LAX01LA255
Date & Time:	July 21, 2001, 11:55 Local	**Registration:**	N5015V
Aircraft:	Hughes 269C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor stated that he was demonstrating an autorotation to his student when the accident occurred. He said that he initiated a straight in autorotation to runway 30 at 600 feet above ground level (agl). The descent rate was stabilized until 200 feet agl, when he felt a sudden increase in the rate of descent. He began the flare at 50 feet agl. He stated that the vertical speed did not decrease at the rate he was accustomed to, resulting in a hard landing. He stated that the tail boom hit the ground first in a right yawing moment. The helicopter then rolled to the right, crushing the right skid, severing the tail boom, and allowing the rotor blades to contact the ground. He noted that no mechanical problems existed with the helicopter during the flight. He did not notice any mechanical anomalies during the autorotation demonstration. He stated that the engine was running normally during the autorotation and the landing flare. The pilot stated that wind shear may have been a factor. He had observed the winds to be from the northwest at 8 knots, and gusts to 12 knots with light turbulence.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's misjudgement of the landing flare during an autorotation demonstration. Factors were shifting winds and an excessive descent rate.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (F) WEATHER CONDITION - SUDDEN WINDSHIFT
2. (F) DESCENT - EXCESSIVE - PILOT IN COMMAND(CFI)

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
3. AUTOROTATION - PERFORMED - PILOT IN COMMAND
4. (C) FLARE - MISJUDGED - PILOT IN COMMAND

Factual Information

On July 21, 2001, at 1155 hours Pacific daylight time, a Hughes 269C, N5015V, was substantially damaged when it landed hard and rolled over during an autorotation for training purposes, at the New Jerusalem Airport, Tracy, California. The flight instructor and dual student were not injured. Visual meteorological conditions prevailed for the instructional flight conducted under 14 CFR Part 91 by Advanced Aviation, Stockton, California. The helicopter departed Stockton Metropolitan Airport approximately 1045, and no flight plan was filed.

The flight instructor stated that he was demonstrating an autorotation to his student when the accident occurred. He said that he initiated a straight in autorotation to runway 30 at the New Jerusalem airport at 600 feet above ground level (agl). The descent rate was stabilized until 200 feet agl, when he felt a sudden increase in the rate of descent. He began the flare at 50 feet agl. He stated that the vertical speed did not decrease at the rate he was accustomed to, causing the helicopter to land hard. He stated that the tail boom hit the ground first in a right yawing moment. The helicopter then rolled to the right, crushing the right skid, severing the tail boom, and allowing the rotor blades to contact the ground. He noted that no mechanical problems existed with the helicopter during the flight. He did not notice any mechanical anomalies during the autorotation demonstration. He stated that the engine was running normally during the autorotation and the landing flare. The pilot stated that wind shear may have been a factor. He had observed the winds to be from the northwest at 8 knots, and gusts to 12 knots with light turbulence.

According to the pilot, he had a total flight time of 2,100 hours, of which 650 hours were in helicopters. He had 300 hours of flight experience in this make and model prior to the accident, 6 of which were in the last 30 days. The student had a total of 1,750 hours, of which 1,210 were in helicopters. He had 50 hours in this make and model.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	34,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 multi-engine; Airplane single-engine; Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	June 1, 2001
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 1, 2000
Flight Time:	2100 hours (Total, all aircraft), 300 hours (Total, this make and model), 1900 hours (Pilot In Command, all aircraft), 160 hours (Last 90 days, all aircraft), 55 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Airline transport; Commercial	**Age:**	32,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
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 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 8, 2001
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 27, 2001
Flight Time:	1750 hours (Total, all aircraft), 50 hours (Total, this make and model), 1650 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N5015V
Model/Series:	269C	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	611058
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	May 22, 2001 Annual	**Certified Max Gross Wt.:**	2050 lbs
Time Since Last Inspection:	53.3 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6827 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	HIO-360-D1A
Registered Owner:	Advanced Aviation	**Rated Power:**	190 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSCK,30 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	11:56 Local	**Direction from Accident Site:**	175°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	24°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Stockton, CA (SCK)	**Type of Flight Plan Filed:**	None
Destination:	Tracy, CA (1Q4)	**Type of Clearance:**	None
Departure Time:	10:45 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	New Jerusalem 1Q4	**Runway Surface Type:**	Asphalt
Airport Elevation:	62 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30	**IFR Approach:**	None
Runway Length/Width:	4000 ft / 100 ft	**VFR Approach/Landing:**	Simulated forced landing

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:**	37.679164,-121.29972

Administrative Information

Investigator In Charge (IIC):	Cline, Steven
Additional Participating Persons:	Robert Smedley; Federal Aviation Administration; Oakland, CA
Original Publish Date:	November 28, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52790