



National Transportation Safety Board Aviation Accident Factual Report

Location:	PLYMOUTH, MA	Accident Number:	NYC94LA050
Date & Time:	03/01/1994, 1535 EST	Registration:	N7043J
Aircraft:	BELL 47G-5	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Serious, 1 None

Flight Conducted Under: Part 91: General Aviation - Instructional

On March 1, 1994, at about 1535 eastern standard time, a Bell 47G5 Helicopter, N7043J, owned and operated by Plymouth Copters, was substantially damaged during a refueling operation while the helicopter was idling at the Plymouth Airport, Plymouth, Massachusetts. The pilot at the controls was not injured, but the instructor pilot operating the fuel truck received serious injuries. Visual meteorological conditions prevailed. A flight plan had not been filed for the flight operating under 14 CFR 91.

The rated student pilot (RSP), John Christopher, was receiving instruction in the Bell 47G5, to qualify him for insurance purposes for the Bell 47G2 that he had recently purchased. The flight instructor/owner of Plymouth Copters Robert Dumas, and the RSP, departed the Plymouth Airport (PYM) in N7043J about 1400, for a local training flight.

After a 1 1/2 hour flight, they returned to PYM to refuel the helicopter, and were planning to depart again for another 1 1/2 hour training flight.

In his statement, the RSP stated:

"...[Mr. Dumas] said that he would pull up along side of the helicopter, and re-fuel it without shutting it down. I gave him a look of disapproval to which he responded, 'We do this all the time'. I landed on the pad, the helicopter well centered...Mr. Dumas left the helicopter. I began applying collective friction. Before I engaged cyclic friction Mr. Dumas had already pulled along side of the helicopter and re-entered the cabin. He said to move the cyclic forward slightly and to hold it there, which I did. I watched ...the re-fueling, and the stowing of the hose. The fuel truck had side boards along its length approximately 6 feet above the ground. To stow the hose, Mr. Dumas fed the hose with his left hand over the top of the side boards while holding the nozzle with his right hand...My glance turned to the gauges when I felt an extreme shock through the cyclic accompanied by a loud bang. The helicopter turned to the right as in a tail rotor failure, I immediately chopped the throttle...."

According to the Flight Instructor's statement, after landing, he exited the helicopter to drive the fuel truck into position to refuel the helicopter while it was idling. He returned with the

fuel truck and positioned it outside of the main rotor tip path plane. The flight instructor observed that the tip path plane had drifted down, and went to the RSP at the controls and told him to level the main rotor tip path plane.

The flight instructor further stated:

"...I refueled the helicopter and turned my back toward the helicopter, returning the fuel hose to the truck...The main rotor tip path plane must have been permitted to dip down by the pilot, low enough to hit the fuel hose as I carried it back to the truck, which in turn struck me and began the sequence of events that resulted in the...damage to the helicopter."

In the Federal Aviation Administration (FAA) Inspector's report he stated that interviews with Plymouth Copters employees revealed that company policy mandates a minimum of a 10 foot clearance between the fuel truck and the turning rotor blades. With the helicopter centered on the helipad, the tip path plane clearance with the fuel truck was 3.44 feet.

The FAA Inspector's report further stated:

"...Robert Dumas is seventy four inches tall. The distance from the ground to the top of the side boards on the fuel truck is seventy one and a half inches. The optimum height of the main rotor disc is 111.66 inches...Under the best of conditions, the clearance available can be predicted at 30.16 inches. We re-enacted the stowage of the hose assembly using an employee of Plymouth Copters who is seventy four inches in height. Even under this controlled environment, the tendency was for the hose to deflect up from the top of the truck in excess of thirty inches...."

Pilot Information

Certificate:	Commercial	Age:	51, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Unknown
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	10/20/1993
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	8000 hours (Total, all aircraft), 8000 hours (Pilot In Command, all aircraft), 80 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BELL	Registration:	N7043J
Model/Series:	47G-5 47G-5	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	25020
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	Annual	Certified Max Gross Wt.:	2850 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	LYCOMING
ELT:	Not installed	Engine Model/Series:	VO-435-B1A
Registered Owner:	PAC LEASING CORP	Rated Power:	265 hp
Operator:	PAC LEASING CORP	Operating Certificate(s) Held:	None
Operator Does Business As:	PLYMOUTH COPTER	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	NZW, 162 ft msl	Distance from Accident Site:	16 Nautical Miles
Observation Time:	1555 EST	Direction from Accident Site:	348°
Lowest Cloud Condition:	Scattered / 3000 ft agl	Visibility	7 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	320°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	2°C / -13°C
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1400 EST	Type of Airspace:	Airport Advisory Area; Class G

Airport Information

Airport:	PLYMOUTH (PYM)	Runway Surface Type:	Asphalt
Airport Elevation:	149 ft	Runway Surface Condition:	Dry
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Serious, 1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 1 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ROBERT L PEARCE
Additional Participating Persons:	WAYNE B SEER; BEDFORD, MA RICHARD BUNKER; BOSTON, MA
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.nts.gov/pubdms/ .