Aviation Investigation Final Report

Location:	Ninilchik, Alaska	**Accident Number:**	ANC20LA083
Date & Time:	August 25, 2020, 07:00 Local	**Registration:**	N160SH
Aircraft:	Eurocopter AS350	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	1 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The pilot reported that he was transporting workers to and from various mining sites about 3 miles from the main camp. The pilot flew to a high mountainside helipad, which was located about 2,750 ft mean-sea-level (msl) cut into a rocky steep slope and disembarked 2 passengers. He flew the helicopter to a nearby site and waited a short time for the off going workers to be ready for pick up. He departed and made another approach to the helipad. The pilot stated that when the helicopter was about 25 ft from the landing site, at very slow forward airspeed, the engine "flamed out" and the helicopter yawed right. The pilot continued the right turn, lowered the collective and attempted to autorotate to a level area about 600 ft below the helipad. When the pilot realized that the helicopter could not make the intended site, he slowed down by applying some aft cyclic and increasing collective to cushion the touchdown. The helicopter landed on the skids facing down the mountain and continued to slide. The left skid impacted a rock and the helicopter rolled over and continued down the mountain, resulting in the tail boom separating. The helicopter came to rest on a drill pad under construction about 200 ft below the helipad. The tail section, fuselage and main rotor blades sustained substantial damage. The examination of the airframe did not reveal any discrepancies. The engine was placed on an engine test cell and two tests were run for a total of 2 hours 23 minutes with 9 starts. The engine demonstrated normal operation during testing. No abnormal engine operation, uncommanded shutdown, or loss of power control was observed.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A loss of engine power for an undetermined reason.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Maneuvering-hover	Unknown or undetermined (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On August 25, 2020, about 0709 Alaska daylight time, a Eurocopter (Airbus) AS350 B2 helicopter, N160SH, was substantially damaged when it was involved in an accident near Ninilchik, Alaska. The commercial pilot sustained minor injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 135 air taxi flight.

The pilot reported that he was operating at the Johnson River Tract mining camp located in the Alaska Range mountains west of the Cook Inlet. He was transporting workers to and from various mining sites about 3 miles from the main camp. On the morning of the accident, he conducted a preflight and sumped fuel from the helicopter's main fuel tank and the airframe fuel filters. All samples were clear and bright. The fuel level was about 40%, which corresponded to about 55 gallons of Jet A. There were no known discrepancies. He had flown the helicopter most every day for the previous 2 months and was very familiar with it.

On the morning of the accident, the pilot departed the main camp about 0655 with 4 passengers and disembarked 2 of them at a low-elevation drill pad, and then he flew to a high mountainside helipad, which was located about 2,750 ft msl cut into a rocky steep slope and disembarked the other 2 passengers. He flew the helicopter to a nearby site and waited a short time for the off going workers to be ready for pick up. He departed and made another approach to the helipad. The pilot stated that when the helicopter was about 25 ft from the landing site, at very slow forward airspeed, the engine "flamed out" and the helicopter yawed right. Witnesses reported seeing a puff of smoke and hearing loud alarms when the engine lost power. The pilot continued the right turn, lowered the collective and attempted to autorotate to a level area about 600 ft below the helipad. When the pilot realized that the helicopter could not make the intended site, he slowed down by applying some aft cyclic and increasing collective to cushion the touchdown. The helicopter landed on the skids facing down the mountain and continued to slide. The left skid impacted a rock and the helicopter rolled over and continued down the mountain, resulting in the tail boom separating. The helicopter came to rest on a drill pad under construction about 200 ft below the helipad, on its left side. Refer to figure 1. The tail section, fuselage and main rotor blades sustained substantial damage. The mining workers at the helipad called for assistance, hiked down to the site, and assisted the pilot.

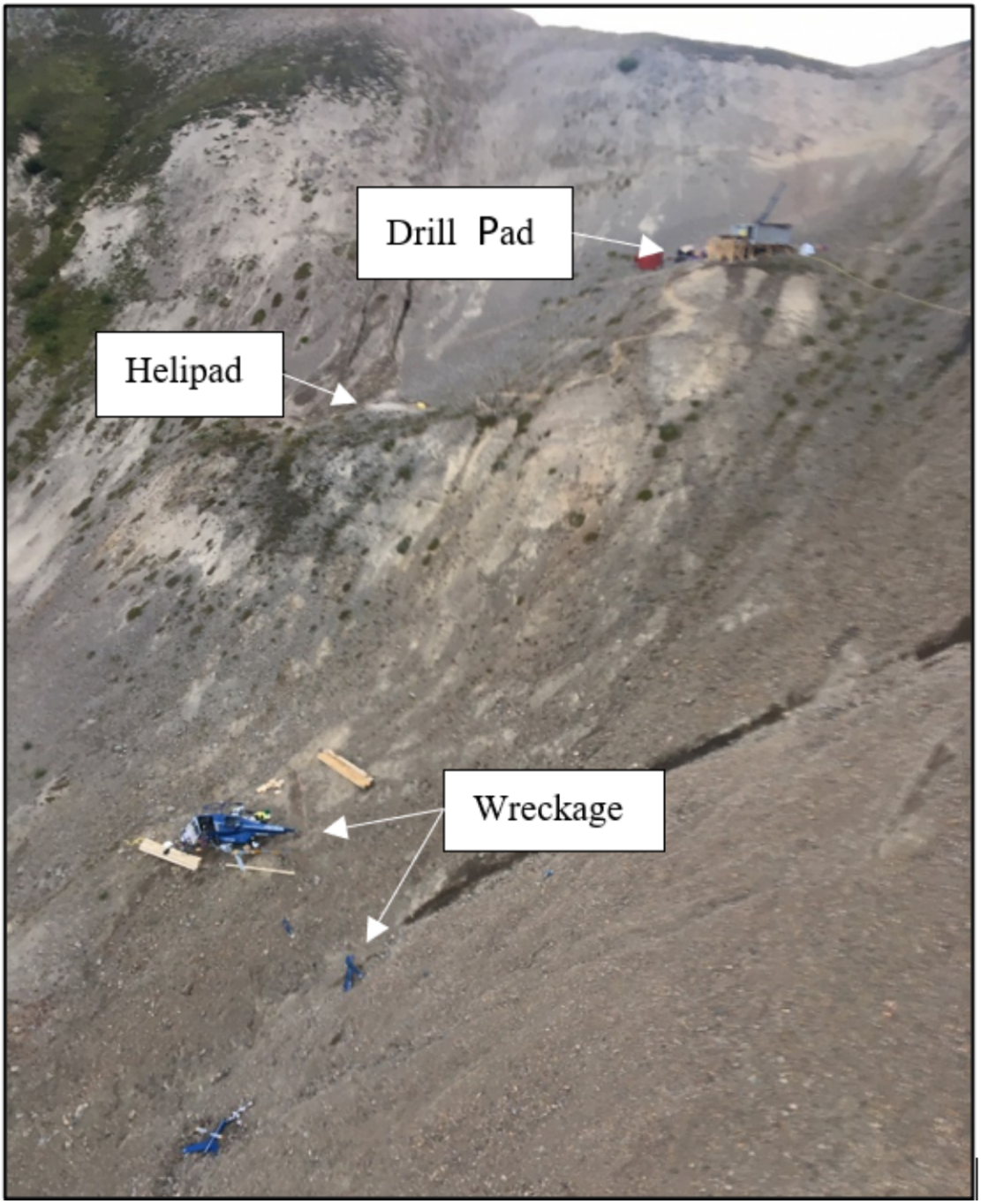

Figure 1. The accident site and wreckage. (Courtesy of Soloy Helicopters.)

The helicopter was recovered from the remote camp and examined by the investigative team. The Honeywell LTS101-700D2 turbine engine was secure on the airframe and intact. No airframe or engine anomalies, other than impact damage, were observed. The engine was shipped to Honeywell Engines division for further examination.

Engine Examination

On February 18, 2021, the engine was placed on an engine test cell and run for 1 hour 14 minutes and with five starts. The engine demonstrated the ability to meter and control fuel flow, and the power turbine governor operation and performance was demonstrated. No abnormal operation of the engine was observed.

On February 23, 2022, the engine was placed on an engine test cell to conduct testing on the engine overspeed system, and it was run for 1 hour 9 minutes with four starts. Three tests were conducted that demonstrated the ability of the overspeed system to detect the overspeed, command the overspeed solenoid to activate, vent pneumatic control pressure, command the fuel control minimum fuel flow, and the engine to remain operating at the minimum flow condition. It also demonstrated the ability of the system to deactivate once the input speed dropped below the reset value, and the engine to recover to normal operation.

Pilot Information

Certificate:	Commercial; Foreign	**Age:**	50,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	October 3, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 28, 2020
Flight Time:	15432 hours (Total, all aircraft), 755 hours (Total, this make and model), 15320 hours (Pilot In Command, all aircraft), 166 hours (Last 90 days, all aircraft), 86 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Eurocopter	**Registration:**	N160SH
Model/Series:	AS350 B2	**Aircraft Category:**	Helicopter
Year of Manufacture:	1993	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2739
Landing Gear Type:	High skid	**Seats:**	6
Date/Type of Last Inspection:	August 15, 2020 100 hour	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:	105 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	7203 Hrs at time of accident	**Engine Manufacturer:**	Honeywell Aerospace
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	LTS101-700D2
Registered Owner:	Alaska Helicopter Leasing LLC	**Rated Power:**	700 Horsepower
Operator:	Soloy Helicopters	**Operating Certificate(s) Held:**	Rotorcraft external load (133), On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	2SYA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAHO,73 ft msl	**Distance from Accident Site:**	53 Nautical Miles
Observation Time:	14:53 Local	**Direction from Accident Site:**	123°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 1200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.78 inches Hg	**Temperature/Dew Point:**	11°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ninilchik, AK (PVT)	**Type of Flight Plan Filed:**	None
Destination:	Ninilchik, AK (PVT)	**Type of Clearance:**	None
Departure Time:	06:55 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	60.124721,-152.94528(est)

Administrative Information

Investigator In Charge (IIC):	Price, Noreen
Additional Participating Persons:	Curtis Martin; Federal Aviation Administration; Anchorage, AK Sam Soloy; Soloy Helicopters; Wasilla, AK Dana Metz; Honeywell Aerospace; Phoenix, AZ
Original Publish Date:	September 29, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101863