Aviation Investigation Final Report

Location:	Stuart, Oklahoma	**Accident Number:**	DFW07LA162
Date & Time:	July 14, 2007, 14:30 Local	**Registration:**	N5770F
Aircraft:	Aerospatiale SA-315	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 133: Rotorcraft ext. load		

Analysis

The helicopter experienced a loss of engine power while hovering out of ground effect while performing external load operations. While moving a heavy load , the helicopter's fuel light was reported to have flickered. The company's mechanic drained the tank, purged the fuel lines, and replaced the fuel filter. The helicopter was then filled with "clean fuel" and test flown for approximately 30-minutes; with no problems noted. After moving 2 or 3 more loads, and while repositioning the next load, the pilot "felt the engine surge slightly". All engine instruments appeared to be in the normal range and the pilot elected to continue to move the external load. The engine then "cut back to ground idle' and the helicopter descended through the trees. The engine was removed from the airframe, and shipped to an engine overhaul facility for further investigation. An initial examination of the engine did not reveal any pre-impact anomalies. The engine was placed in a test cell for a full run-up. Two engine starts were attempted; however, the engine failed to start. After the first attempt, the idling device strainer was found clogged and was replaced. The engine was disassembled after the second failed attempt and the examination revealed that the fuel tube was clogged, and fuel was not getting to the fuel injection wheel in the engine. Fuel samples taken at the accident scene and at the engine examination, failed to find containments in the fuel. A lab test of the substance that was found in the fuel tube, failed to identify the foreign substance.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to a clogged fuel tube. A contributing factor was the lack of suitable terrain for the forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: HOVER - OUT OF GROUND EFFECT

Findings
1. (C) FUEL SYSTEM - BLOCKED(TOTAL)

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

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

Findings
2. OBJECT - TREE(S)
3. (F) TERRAIN CONDITION - NONE SUITABLE

Factual Information

On July 14, 2007, approximately 1430 central daylight time, a single-engine, turbine powered Aerospatiale SA-315 helicopter, N5770F, was substantially damaged during a forced landing following a loss of engine power while performing long-line external load operations near Stuart, Oklahoma. The commercial pilot, sole occupant of the helicopter, was not injured. The helicopter was owned and operated by Skydance Northwestern, Inc., of Minden, Nevada. Visual meteorological conditions prevailed, and a flight plan was not filed for the external load flight conducted under the provisions of 14 Code of Federal Regulations Part 133.

The pilot stated in the accident report (NTSB Form 6120.1), that while moving a heavy load on the external load, he noticed the fuel light "flickering." The helicopter returned to the base and reported the event. The pilot reported that a mechanic drained the fuel tank, purged the fuel lines, and replaced the engine fuel filter. The helicopter was then filled with "clean fuel" and test flown for approximately 30-minutes; with no problems noted. The pilot then resumed moving drills, and after moving 2 or 3 additional drills, and while repositioning to pick-up the next load, he felt "the engine surge slightly" so he elected to set the load back on the ground to scan the engine instruments. The engine instruments appeared normal and the pilot continue to move his load. The pilot added that when he applied engine power, the engine "cut back to ground idle" and the helicopter descended through the trees.

The Federal Aviation Administration inspector, who responded to the accident scene, reported the helicopter sustained structural damage during the forced landing. Fuel samples were taken by the operator and sent to a private lab for analysis.

The engine was removed from the airframe, and shipped to Heli-Support, Inc., in Fort Collins, Colorado, for further investigation. An initial engine examination was conducted on 29 August 2007, with representatives from the operator, engine manufacturer, and the NTSB present. The initial examination of the engine did not reveal any pre-impact anomalies. Additional fuel samples were taken and sent to a second lab.

The engine was then placed in a test cell for an engine run. Two engine starts were attempted; however, the engine failed to start. After the first attempt, the idling device strainer was found clogged and was replaced. The engine was disassembled after the second failed attempt and the examination revealed that the fuel tube was clogged, and fuel was not getting to the injection wheel in the engine.

Results of the fuel samples taken, failed to find containments in the fuel. A lab test of the substance that was found in the fuel tube, failed to identify the substance. A source for the contamination was not found.

At 1453, the automated weather observing system at MLC, located approximately 15 miles from the accident site, reported variable winds at 6 knots, 10 statute miles visibility, scattered clouds at 4,200 feet, temperature 86 degrees Fahrenheit, dew point 67 degrees Fahrenheit, and an altimeter setting of 29.94 inches of Mercury.

Pilot Information

Certificate:	Commercial	**Age:**	34,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	June 1, 2006
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 1, 2006
Flight Time:	7000 hours (Total, all aircraft), 250 hours (Total, this make and model), 6800 hours (Pilot In Command, all aircraft), 250 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aerospatiale	**Registration:**	N5770F
Model/Series:	SA-315	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2593
Landing Gear Type:	High skid	**Seats:**	4
Date/Type of Last Inspection:	July 1, 2007 100 hour	**Certified Max Gross Wt.:**	3500 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	12620 Hrs at time of accident	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, not activated	**Engine Model/Series:**	Artouste III
Registered Owner:	Skydance Northwestern, Inc.	**Rated Power:**	858 Horsepower
Operator:	SKYDANCE OPERATIONS INC	**Operating Certificate(s) Held:**	
Operator Does Business As:		**Operator Designator Code:**	NCNL

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MLC	**Distance from Accident Site:**	
Observation Time:	14:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 4200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	30°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Stuart, OK	**Type of Flight Plan Filed:**	None
Destination:	Stuart, OK	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	34.902778,-96.077774

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Chris Morris; FAA FSDO; Oklahoma City , OK Joan Gregoire; Turbomeca; Grand Prairie, TX Richard Greenlaw; Skydance Helicopters, Inc; Minden, NV Arnold Scott; NTSB; Denver, CO
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Investigation Class:	Class
Note:	
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