



National Transportation Safety Board Aviation Accident Final Report

Location:	Falkner, Mississippi	Accident Number:	ATL05FA038
Date & Time:	January 5, 2005, 23:03 Local	Registration:	N350RM
Aircraft:	Aerospatiale AS350-D	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The helicopter collided with trees and the ground while flying level with rising terrain during low cloud and low visibility condition. The pilot had earlier flown to a highway accident site in order to transport injured persons to the hospital. During the attempted loading of the injured persons, the chin bubble of the helicopter was damaged, and consequently the flight was canceled. The injured persons were ground transported by ambulance. A mechanic was dispatched to the site and he encountered moderate rain and gusty winds while en route. The mechanic made a temporary repair to the damaged area of the helicopter. According to the mechanic, the pilot indicated the site was a flood area and with a forecast of more rain, he preferred to move the helicopter. The mechanic suggested to the pilot that he relocate the aircraft locally to a school or hospital after first hovering after lift off and evaluating the weather. The mechanic would then drive the pilot from the relocation site to the destination. The pilot did not acknowledge his suggestion and made a walk-around inspection of the helicopter, and checked his flight charts for obstructions. The pilot started the helicopter and departed. There is no record that the pilot obtained a weather briefing by radio or by cell phone before departing the accident site. The wreckage was located the following morning. Doxylamine, a sedating over-the-counter antihistamine used in sleep aids and multi-symptom cold relievers, was found in the pilot's blood on toxicological examination. Pseudoephedrine, a decongestant available in many multi-symptom cold relievers, was also found in the pilot's blood.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper decision to attempt VFR flight into known instrument flight conditions and failure to maintain altitude clearance resulted in an in-flight collision with trees and the

ground.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings

1. WEATHER CONDITION - LOW CEILING
 2. (C) PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
 3. USE OF INAPPROPRIATE MEDICATION/DRUG - PILOT IN COMMAND
 4. WEATHER CONDITION - RAIN
 5. (C) VFR FLIGHT INTO IMC - ATTEMPTED - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CRUISE

Findings

6. OBJECT - TREE(S)
7. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
8. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On January 5, 2005, at 2303 central standard time, an Aerospatiale AS350-D, N350RM, registered to Rocky Mountain Holdings LLC. doing business as Air Methods Corporation, operating as a 14 CFR Part 91 air ambulance positioning flight, collided with trees and the ground in the vicinity of Falkner, Mississippi. Instrument meteorological conditions prevailed at the accident site and a company flight plan was filed. The pilot did not call the Medical Program Communications Center to initiate flight following after takeoff. The helicopter was destroyed. The commercial pilot was fatally injured. The flight originated from an open field located adjacent to County Road 564 in the vicinity of Falkner, Mississippi, on January 5, 2005, at 2303.

According to Air Methods personnel, the pilot was dispatched from North Mississippi Medical Center in Tupelo, Mississippi, to an automobile accident located in the vicinity of County Road 564. The pilot called the Medical Program Communications Center by cell phone at 2100 and stated he had a problem with a damaged chin bubble. A company mechanic drove to the accident scene. During the drive the mechanic encountered moderate rain and some gusty winds. Upon arrival at the accident site, the mechanic inspected, and made a temporary repair on the helicopter chin bubble. The mechanic stated, "the weather at this time appeared to be deteriorating with both ceiling and visibility limited. It was difficult to judge as there were no lights in the area." The mechanic mentioned to the pilot that he might have to leave the aircraft and return to get it the next day.

The pilot informed the mechanic that he had been told the field the helicopter was parked in was prone to flooding. The pilot stated he preferred to move the helicopter since it had been raining and more rain was forecast for the night. The mechanic suggested to the pilot that he might want to pick the helicopter up to a high hover to evaluate the ceiling and visibility and that he could relocate the helicopter to the school at Falkner, Mississippi or the Ripley Hospital helipad. The mechanic informed the pilot he would pick him up in his truck and they could ride back to Tupelo together. The mechanic stated the pilot made a walk around inspection of the helicopter and checked his flight charts for obstructions. The pilot started the helicopter and departed at 2303 climbing vertically to about 300 feet. The mechanic turned around, went back to the road, thanked the police, and departed. After driving a short distance the mechanic noticed his cell phone had telephone coverage. He called the Medical Program Communications Center, and asked if they had heard from the pilot. The Communications Center stated the pilot had not been in contact. The mechanic drove to the school and to the hospital helipad and did not observe the helicopter. The mechanic called the Communications Center and was informed the pilot had not arrived and stated they had initiated the overdue or missing aircraft procedures. Search personnel located the helicopter at 0607 on January 6, 2004.

The Tippah County Sheriff stated he was at the automobile accident site with the helicopter pilot. A cold front had just passed through the area and the winds were strong and gusty with frequent downpours. The pilot was observed getting into the helicopter, and starting the engine

and initiating a takeoff. The helicopter cleared the treetops and flew on a westerly heading towards Highway 15. The helicopter did not appear to gain much altitude as it was flying away. The helicopter lights disappeared from view about 1 mile after it departed. The Sheriff stated, "I thought maybe it was enveloped into the clouds of the low ceiling, but was instinctively I felt this was not the case."

PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the pilot was issued a commercial pilot certificate on May 11, 1985, with ratings for airplane single engine land, airplane multiengine land, rotorcraft helicopter, instrument airplane, and helicopter. In addition the pilot held a flight instructor certificate with ratings for airplane single engine land issued on December 18, 2002. The pilot held a mechanic certificate issued on December 2, 1983, with airframe and power plant ratings. The pilot held a second class medical issued on April 14, 2004, with the restriction "must wear corrective lenses." The pilot reported on his application for the medical certificate that his total flight time was 4,300 hours. Review of the company records revealed the pilot had 6,700 total flight hours, 4,850 hours was in helicopters of which 1,800 were in the AS350-D. The pilot had flown 27.5 hours in the last 90 days in the AS350D, 4.8 hours in the last 30 days, and .3 in the last 24 hours. No actual instrument flight time or simulated instrument flight time had been flown in the last 7 months. Company records showed the pilot had flown 110 hours of actual instruments of which 90 hours were flown in helicopters. The pilot's last evaluation flight in basic instruments, and unusual attitudes was conducted on July 10, 2003. The pilot's last biennial flight review was on June 2, 2004.

AIRCRAFT INFORMATION

The last Approved Aircraft Inspection Program (AAIP), "Operation A" was conducted on December 24, 2004, and the total time on the airframe was 10,449.3 hours. The helicopter has flown 14 hours since the inspection. The total engine time as of January 4, 2005, was 6876.0. The last turbine assembly overhaul was conducted on February 26, 2004. The turbine total time was 3,318.5 and the engine total time was 6519.2 hours. The last recorded 24-month avionics inspection was conducted on November 30, 2004. The helicopter had Supplemental Type Certificate (STC) Number SH3324NM applied which changed the helicopter engine from a Honeywell LTS 101600A engine to a Rolls-Royce 250-C30M engine. The FAA Registry had not been updated to reflect the modification.

METEOROLOGICAL INFORMATION

The Olive Branch Airport, Olive Branch, Mississippi, located 47 miles west of the accident site, and on the cold air side of the front, the 2340 surface weather observation was: wind 300-degrees at 10 knots, visibility 2 1/2 miles (present weather missing), ceiling broken at 500 feet, broken at 1,000 feet, overcast at 4,000 feet, temperature 46- degrees Fahrenheit, dew point temperature 46-degrees Fahrenheit, altimeter 29.88 with remarks: automated weather system without a precipitation discriminator, hourly precipitation less than 0.01 inches (trace).

The National Weather Surface (NWS), Surface Analysis Chart for the south-central United

States for 00:00 on January 6, 2005, depicted a cold front extending from Kentucky southwestward into Tennessee, Mississippi, Louisiana, and into the Gulf of Mexico, and then turning west into Texas. The accident site was located in the immediate vicinity of the cold front. The station models across Mississippi depicted southerly winds at 10 to 15 knots ahead of the front, with a defined wind shift to the northwesterly on the cold air side of the front, with broken to overcast skies extending over the area.

The southeast section of the NWS Weather Depiction Chart for 2200 on January 5, 2005, depicted the conditions prior to the accident. The chart indicated a band of instrument flight rule (IFR) conditions oriented in a northeast-to-southwest direction along and behind the cold frontal position extending from the northern portion of the chart from Illinois, Missouri, western Kentucky, and Tennessee, northwestern Mississippi, Arkansas, and western Louisiana, into eastern Texas. The station models in the IFR areas indicated ceilings ranging from 400 to 600 feet with visibilities restricted in light to moderate intensity rain. Several areas of IFR conditions were also depicted along the Gulf coast from the Florida panhandle, Alabama, Mississippi, and Louisiana. The station models in these areas indicated the conditions were due to surface based obscurations and low ceilings with visibility restricted in mist and dense fog. Surrounding the IFR conditions was an area of marginal visual flight rule (MVFR) conditions from central Kentucky, Tennessee, Mississippi, and Louisiana, extending westward through Texas, into New Mexico, Oklahoma, to eastern Kansas. The MVFR area also extended across the Gulf coast around the area of IFR conditions. Visual flight rule (VFR) conditions were depicted across eastern, central, and southern Mississippi, and over northern Alabama. MVFR to IFR conditions were depicted in the vicinity of the accident site.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located 1 mile west of County Road 200, 5 miles southeast of Falkner, Mississippi, and 1 mile west of County Road 564 and Walnut Creek Bridge in a wooded hilly area. The elevation at the departure point was 469 feet MSL. Examination of the crash site revealed the helicopter collided with trees .7 tenths of a mile from its departure point on a heading of 306-degrees magnetic at an elevation of 508 feet MSL. Pieces of the main rotor blade skins, canopy structure, plexiglas and engine cowling were located at the base of the trees. The transmission and rotor head assembly with the remaining pieces of the rotor blades were located 194-feet down the crash debris line. The upper canopy separated from the airframe and was located 16 feet left of the debris line and 234 feet from the initial point of impact. The tail boom separated forward of the left and right horizontal stabilizer and was located 25-feet left of the crash debris line and 225-feet down the crash debris line. The main wreckage rested inverted 245-feet down the crash debris line on a heading of 338-degrees magnetic at an elevation of 520 feet.

The nose structure was crushed aft two feet and was bent downward on the co-pilot's side. The instrument panel was destroyed and separated from the cockpit floor. The center pedestal was displaced aft into the throttle quadrant. The collective pitch lever was in the low mid range and deformed to the left. The cyclic control stick remained attached to the cyclic torque tube. The anti torque pedals remained attached to the under floor anti-torque controls. The pilot's seat and seat track separated from the cabin structure. The pilot's seatbelt and shoulder harness were fastened. The left seat belt floor fitting separated from the cabin floor. The double bench

seat and single bench seat in the aft cabin area remained attached to the cabin structure. The left and right forward doors separated with pieces of the doorframe and windscreen attached. The right forward door handle was fractured and the door latch was in the open position. The left forward door handle was intact and the latch was in the open position. The left rear door separated at the hinge joint. The right rear door was partially separated and remained attached to the airframe. The lower forward fairing separated from the cabin floor. Compression bucking was present on the cabin floor former on the pilot's side. The center fairing separated from the center structure on the lower left side of the fuselage.

The pilot's anti-torque control was intact and extended rearward to the Richard cable interface where it separated. The Richard cable was intact aft of the separation and extended rearward to the tail rotor servo. The cyclic control linkage was intact between the base of the cyclic and the mixing unit. The collective pitch control was intact from the collective pitch push-pull tube and extended rearward to the mixing unit. Both lateral control rods and the collective control rod from the mixing unit separated aft of the transmission deck walking beams.

The main transmission was intact and separated from the transmission deck with pieces of the transmission deck attached. All transmission mounts remained attached to the separated mounting structure. All transmission support legs separated from the transmission deck. The epicyclic chip detector was removed and free of contaminants. The lower chip detector was removed and was free of contaminants. The main rotor head cover (hat) was in place and intact. The dynamic balance springs and weights were intact. All Starflex arms separated and the Starflex body remained in place. All upper and lower arm sleeves remained attached to the Starflex and the main rotor blade root ends. The upper and lower arm sleeves were displaced. The main pitch links remained attached to their respective pitch horns and the rotating swash plate. The main rotor drive link was intact. The upper rotating swash plate assembly remained intact. The stationary swash plate assembly and collective link remained intact. All main rotor hydraulic servos remained attached to the stationary swash plate and their respective epicyclic mounting locations. The input links to all primary hydraulic servos were separated. The main input drive shaft separated from the coupling strap pack. Two castellated nuts on the transmission input adapter separated. The third castellated nut remained intact with a cotter pin installed with pieces of the flex pack attached. The air conditioner and drive belt was intact. The hydraulic reservoir was crushed and the hydraulic pump assembly was displaced. The hydraulic drive belt separated. The driven pulley bearing is smooth, rotated freely when turned by hand, and hydraulic fluid came out of the pump.

The red main rotor blade remained attached to the main rotor hub and was bent upward. The leading edge of the rotor blade was not damaged. The upper skin of the rotor blade was intact. The lower skin of the rotor blade was damaged at the serial number and at the center of the trim tab. The trailing edge of the rotor blade was separated in two places with foam core material visible. The main rotor blade tip was not damaged. The blue main rotor blade remained attached to the main rotor hub and was bent upward. The rotor blade after body and skin separated 8-feet 5-inches outboard of the main rotor blade root and extended outboard to the main rotor blade tip. The yellow main rotor blade remained attached to the main rotor hub. Scarring was present 6-inches outboard of the blade root. The leading edge spar was fractured 3-feet outboard of the main rotor blade root. The leading edge of the main rotor blade separated 11-feet 5-inches outboard of the main rotor blade root.

The fuel tank fairing latches were in the latched position but not connected to the fuel tank fairing. The fuel tank fairing remained attached by the two forward latches and the right security cable. The left security cable was loose. The forward fuel tank mounting strap and the aft fuel mount separated and the main fuel tank was ruptured. The left and right main longitudinal structural beams were buckled. The forward and aft cross tubes were intact. The left skid was not damaged. The right skid toe separated forward of the forward cross tube ankle. The right spring steel extension was bent in an upward direction. The left spring steel extension was not damaged.

The engine assembly separated from the engine deck and was inverted on the left side of the main wreckage oriented perpendicular to the long axis of the fuselage. The engine remained attached to the airframe by mechanical linkage, various fuel and oil lines, and pieces of sheet metal shroud material surrounding the engine air intake at the forward end of the engine. The engine was removed and transported to Mesa, Arizona, for further examination.

Examination of the engine was conducted at the AeroMartime facility in Mesa, Arizona, under the direction of the NTSB on February 9, 2005. Examination of the engine assembly revealed the exterior surfaces of the compressor, outer combustion case, exhaust collector support, and the power turbine and gas producer turbine supports were not breached. The linkage to the fuel control and governor were fastened to their respective actuating arms and turned freely from stop to stop. Fifty percent of the vanes in the compressor impeller exhibited leading edge bends opposite the direction of rotation, and scoring was present on the inner surfaces of the front diffuser. The spur adapter gear shaft, turbine to compressor coupling and the turbine shaft to pinion gear coupling were not damaged. Faint silver metallic deposits were present on the inlet side of the dome of the first stage nozzle shield. The third stage turbine nozzle exhibited silver metal spatter deposits. The upper and lower chip detectors were free of contaminants. The bearings were oil wetted, turned freely, and were absent of damage and thermal distress. Continuity of the N1 and N2 drive trains was confirmed through the accessory gearbox.

The left baggage compartment door was open. The tail boom separated about 94-inches aft of the tail boom attachment point. The tail rotor drive shaft cover had impact marks present on the top of the drive shaft cover about 24-inches, 62-inches, and 94-inches aft of the tail boom attachment point. Blue paint transfer was present on the "N" of the helicopter registration number on the right side of the tail boom. An approximate 30-inch section of the tail boom was separated aft of the initial tail boom separation point. The separated section of the tail boom was flattened and remained attached by the position light wiring harness. The short segment of the tail rotor drive shaft from the engine spline was separated. The aft end of the short tail rotor drive shaft separated at the flex pack with pieces of the flex pack attached. The remaining tail rotor drive shaft separated in four pieces. An impact mark was present on the tail rotor drive shaft 124-inches outboard of the tail boom attachment point.

The horizontal stabilizer remained attached to the separated section of the tail boom. The right side of the tail boom was damaged. The left side of the tail boom was not damaged. The forward end of the tail boom exhibited evidence of a main rotor blade strike forward of the horizontal stabilizer. The tail rotor gearbox and tail rotor assembly was intact and remained

attached to the tail boom. The tail rotor blades were moved by hand and pitch and drive continuity was confirmed between the linkage and the tail rotor hub through the tail rotor gearbox. The 90-degree gearbox chip detector plug was removed and was free of contaminants. The upper vertical fin separated from the tail boom at its attachment point. The lower vertical fin and steel extension remained attached to the tail boom.

MEDICAL AND PATHOLOGICAL INFORMATION

The Mississippi State Medical Examiner conducted a postmortem examination of the pilot, on January 7, 2005. The reported cause of death was blunt force trauma. The Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma, performed postmortem toxicology of specimens from the pilot. The results were negative for carbon monoxide, cyanide, and ethanol. Dooxylamine, 0.087 (ug/ml, ug/g) was detected in the blood and liver. Pseudoephedrine was detected in the blood and liver.

TEST AND RESEARCH

The pilot's altimeter and attitude indicator were removed and examined. No anomalies were noted.

ADDITIONAL INFORMATION

The Air Methods Operations Flight Manual states in paragraph 4.9.5 VFR Flight Minimums, "For VFR operations, the pilot-in-command may, in the absence of approved weather sources, use weather information based on the pilot's on observations or on those of other persons to supply appropriate observations.... Air methods pilots shall not accept VFR flights when known or forecast weather is below the minimums listed in this section, unless the pilot's professional opinion the forecast condition that would prevent the flight will not occur based on other reliable information available to the pilot.... In uncontrolled airspace (class G) Night-Local Area, ceiling 800 feet, visibility 2 miles, Night-Cross Country, ceiling 1,000 feet, visibility 3 miles."

The Air Methods Flight Manual states in paragraph 4.9.7 Deteriorating Weather Conditions En route, "If while conducting VFR flight operations, deteriorating weather conditions are encountered, one of the following procedures is to be followed:

- Divert to an alternate airport/heliport or other suitable area where the patient(s) can be transferred to other means of transportation, if applicable.
- Return to the departure point, if applicable.
- Land and notify dispatch or hospital personnel of the situation and make arrangements for care of the patient(s), if applicable.
- If weather conditions and regulations permit, continue the flight under IFR."

The Air Methods Flight Manual states in paragraph 4.9.8 Minimum Altitude for VFR,... "While en route Air Methods helicopter pilots will maintain at least the following minimum altitudes.....Night: 500 feet AGL."

The wreckage was released to Atlanta Air Recovery, Griffin, Georgia, on March 15, 2005. The

aircraft log, daily flight log, aircraft registration certificate, and standard airworthiness certificate was released to the Assistant Vice president, US Aviation Underwriters Inc., on January 12, 2005.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	58, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	Last FAA Medical Exam:	April 14, 2004
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	June 2, 2004
Flight Time:	6700 hours (Total, all aircraft), 1800 hours (Total, this make and model), 27 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aerospatiale	Registration:	N350RM
Model/Series:	AS350-D	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1024
Landing Gear Type:	High skid	Seats:	4
Date/Type of Last Inspection:	December 24, 2004 AAIP	Certified Max Gross Wt.:	4300 lbs
Time Since Last Inspection:	19 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	10463.3 Hrs at time of accident	Engine Manufacturer:	Rolls-Royce
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	250-C30M
Registered Owner:		Rated Power:	650 Horsepower
Operator:		Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:		Operator Designator Code:	QMLA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	OLV,405 ft msl	Distance from Accident Site:	47 Nautical Miles
Observation Time:	22:40 Local	Direction from Accident Site:	270°
Lowest Cloud Condition:		Visibility	2.5 miles
Lowest Ceiling:	Broken / 500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	8° C / 8° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Felkner, MS	Type of Flight Plan Filed:	Company VFR
Destination:	Tupelo, MS	Type of Clearance:	None
Departure Time:	23:03 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	34.821945, -88.892501

Administrative Information

Investigator In Charge (IIC):	Smith, Carrol
Additional Participating Persons:	Charles W Whittington; Jackson FSDO-07; Jackson, MS Rick Thorpe; Rolls-Royce Corporation; Indianapolis, IN Joe Syslo; American Eurocopter LLC; Grand Prairie, TX
Original Publish Date:	September 13, 2005
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=60813

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).