Aviation Investigation Final Report

Location:	Miami, Florida	**Accident Number:**	MIA02FA161
Date & Time:	August 31, 2002, 12:19 Local	**Registration:**	N15460
Aircraft:	Sikorsky S76A+	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 3 Minor
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The pilot stated that during the takeoff he became distracted by a large section of torn awning which was flapping in the wind due to the rotor's downwash, and the helicopter's main rotors impacted the top corner of the building on the right. The helicopter stopped climbing and began to settle, and the pilot said he lowered the collective, and navigated between the building and the parking garage, to the street below, applying full collective pitch to cushion the landing on the street. He then performed the emergency shutdown procedures, and he and his crew egressed from the helicopter. The helicopter incurred damage to the main rotors and fuselage. The copilot stated that he was seated on the left side clearing for obstructions and heard a bump on the right side, followed by repetitive bumps, and saw chunks of helicopter pieces fly by, as the helicopter started to settle. The copilot said that the helistop is largely surrounded by buildings and every takeoff using the accident helicopter from the Miami Children's hospital was a maximum performance takeoff, with very little margin for error. He stated that the departure required the helicopter to be flown from the helipad over an awning covering a walkway and in between buildings on both sides down a street with very little clearance from the buildings, while executing a maximum performance takeoff to climb to gain altitude as quickly as possible. He stated that the operation at the Miami Children's Hospital had been a new contract, and that his management had told the flight crews that they knew it was "tight in there, but to deal with it since they needed the work." The copilot stated that he had not received any site specific training to operate at the Miami Children's hospital helipad since his employment by the operator through the date of the accident. He said that flight related training was not conducted at the Miami Children's helistop due to the hospital's desire to reduce the noise in the residential neighborhood. On September 5, 2002, a Florida Department of Transportation (FL DOT) official and a FAA inspector examined the Miami Children's Hospital helistop, and noted that a significant amount of construction related changes had taken place since the last helistop inspection. FL DOT official stated that the construction included an elevated helipad, and that based on the new construction she requested that Miami Children's Hospital conduct a survey to determine whether the required

clearance requirements to retain the helistop license had changed since issuance of the license. The Vice President/Chief Nursing Officer of the Miami Children's Hospital stated that at FL DOT's request, a survey of the helistop was performed, and upon review of the survey by the management of the Miami Children's Hospital, management's impression was that the clearance requirements for the helistop had not been met due to the new construction/expansion, and helicopter operations at the hospital was suspended until the elevated helipad was completed. A review of FAA records showed that prior to the accident, no reviews/oversight of flight operations at the Miami Children's Hospital's helistop had been conducted by the FAA. An FAA inspector stated that the operator had recently obtained the contract to operate the accident helicopter at the Miami Children's Hospital, and that prior to the accident no evaluation/oversight of the Title 14 CFR part 135 operation had not yet been performed due to it having been a new operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flight crew's diverted attention, inadequate visual lookout, and failure to ensure adequate main rotor clearance. Factors in the accident were the continued operation, with known obstructions in the area, and the failure of the FAA to initially certify the operation prior to its commencement.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. OBJECT - BUILDING(NONRESIDENTIAL)
2. (F) FACILITY INADEQUATE - COMPANY/OPERATOR MANAGEMENT
3. (F) INADEQUATE SURVEILLANCE OF OPERATION - FAA(ORGANIZATION)
4. (C) VISUAL LOOKOUT - INADEQUATE - FLIGHTCREW
5. DIVERTED ATTENTION - FLIGHTCREW
6. (C) CLEARANCE - NOT MAINTAINED - FLIGHTCREW
7. MISC ROTORCRAFT,MAIN ROTOR/TAIL BOOM CONTACT

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
8. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On August 31, 2002, about 1219 eastern daylight time, a Sikorsky, S-76 A+, N15460, registered to Variety Children's Hospital, also known as Miami Children's Hospital, and operated by Air Methods Inc., as a Title 14 CFR Part 91 aeromedical flight, collided with a corner of a multi-story parking garage at Miami Children's Hospital, Miami, Florida, during takeoff/initial climb. Visual meteorological conditions prevailed, and a company visual flight rules flight plan was filed. The airline transport-rated pilot and two medical crewmembers employed by the hospital, received minor injuries, and the commercial-rated copilot received a serious injury. The helicopter incurred substantial damage. The flight was originating at the time of the accident.

The pilot stated that after receiving a request for aeromedical transport, he and his crew were proceeding to Marathon, Florida, to embark a patient and return to the Miami Children's Hospital. The pilot further stated that he was the pilot flying, and the copilot was monitoring the takeoff and clearing for obstacles on the left side. He said that prior to the accident, all events had been normal. The departure path from the helipad is to the east, over an awning which covers a walkway , and which also crosses a street, between an office building, and a multi-story parking garage. The pilot stated that since a raised helipad was presently under construction, exit from the current helipad comprised of the path he had followed, over the awning, while climbing over the street between the building and the parking garage. According to the pilot, as the helicopter was about to pass over the awning he became distracted by a large section of torn awning which was flapping in the wind due to the rotor's downwash. He said he was concerned that the awning not be drawn into the tail rotor as the helicopter passed over the awning, and while he was momentarily distracted, the helicopter's main rotors impacted the top corner of the parking garage on the right side. The helicopter stopped climbing and began to settle, and the pilot said he lowered the collective, and navigated between the building and the parking garage, to the street below, applying full collective pitch to cushion his forced landing on the street. He then performed the emergency shutdown procedures, and he and his crew egressed from the helicopter. The helicopter incurred damage to its main rotors and fuselage. The pilot stated that prior to the accident, there had been no mechanical failure or malfunction to the helicopter or any of its systems.

The copilot stated that the pilot was flying the helicopter, and he was seated on the left side, clearing for obstructions. He said that he heard the sound of, and felt a bump on the right side, and then he heard and felt repetitive bumping, and saw chunks of helicopter pieces fly by, as the helicopter started to settle. He said the pilot steered the helicopter between the buildings, and after the helicopter impacted the ground he heard the pilot say don't get out until everything had stopped. After everything had stopped the copilot said he exited the helicopter and while doing so, tripped on the sidewalk. The copilot also stated that from the helipad's

position, the helistop consists of an area largely surrounded by buildings which made every takeoff using the accident helicopter from the Miami Children's hospital, always a maximum performance takeoff, and which left little margin for error. He stated that the helicopter contained all kinds of medical equipment, and with the medical crewmembers on board, it is normally heavy. According to the copilot, the departure required the helicopter to be flown from the helipad over the awning covering a walkway, and after flying over the awning, the helicopter must be flown toward and between the building and parking garage on both sides down a street, while attempting to climb. He added that there is very little clearance from the walls of the building and the parking garage on both sides, while executing a maximum performance takeoff to climb to gain altitude as quickly as possible. The copilot said that the operation at the Miami Children's Hospital had been a new contract, and added that he remembered Air Method's management telling him and the pilot that they knew it was "tight in there, but to deal with it since they needed the work." The copilot stated that he never received any site specific training to operate at the Miami Children's hospital helistop from the date of his initial employment, through the date of the accident. He added that that flight training was not conducted at the Miami Children's helistop due to the hospital's desire to restrict noise in the residential neighborhood and maintain good community relations.

PERSONNEL INFORMATION

Four persons were onboard the accident helicopter when the accident occurred They included the pilot, copilot and two medical crewmembers that were employees of Miami Children's Hospital. Records obtained from the operator showed that the pilot had accumulated over 6,000 hours of rotary wing flight experience, of which 35 hours were in the same make and model as the accident helicopter. He held an airline transport pilot rotorcraft helicopter certificate, as well as a commercial pilot certificate with airplane single and multiengine land and instrument ratings. In addition, the pilot held a flight instructor certificate with rotorcraft helicopter and instrument ratings, as well as an FAA airframe and powerplant mechanic's license. On March 26, 2002, the pilot was issued an FAA first class medical certificate, which had no stated limitations.

The copilot had accumulated about 2,890 hours of flight experience, of which 1020 were in helicopters. He had accumulated about 50 hours in the same type of helicopter as the accident helicopter. He held a commercial pilot certificate with airplane single engine land and sea, and multiengine land instrument, as well as helicopter instrument ratings. He also held an FAA flight instructor certificate with airplane single and multi engine land and helicopter instrument ratings

AIRCRAFT INFORMATION

N15460 is a Sikorsky S-76A+ transport category helicopter, serial number 760223. The helicopter is owned by Variety Children's Hospital, also known as Miami Children's Hospital, and was equipped with medical equipment and configured for aeromedical transport.

The helicopter was being maintained under an approved inspection program and had accumulated a total of 13,372.1 flight hours on the airframe, of which 32.7 flight hours had been accumulated since the last inspection. The helicopter was equipped with two Turbomeca Arreil 1S turboshaft engines, serial numbers 3017 and 3005 which had accumulated 7856.9 and 8174.7 hours respectively. Both engines were rated for 657.6 pounds of trust each.

METEOROLOGICAL INFORMATION

The Miami Children's Hospital helistop was located in an area that was largely surrounded by buildings, and a visual inspection of the helistop revealed that surface winds at the "sunken" helipad between the buildings were not consistent with surface weather observations. The Miami International Airport 1156 surface weather observation was, winds 110 degrees at 9 knots, clouds 3,000 feet scattered, 9,000 feet broken, 25,000 feet broken, visibility 10 statute miles, temperature 90 decrees F, dew point temperature 75 degrees F, altimeter 30.03 inches Hg.

WRECKAGE AND IMPACT INFORMATION

The helicopter's main rotors impacted the top corner of the parking garage on the right while departing to the east. As the rotors successively hit the parking garage, pieces of the main rotor were thrown, and impacted both the office building, and parking garage that lined the street over which the departure was being flown. The helicopter settled, and came to rest on the lawn adjoining the south edge of the street, in between the building and the parking garage. Visible damage to the helicopter included the right main landing gear, main rotors, power train, and fuselage. Both the building and the garage lining the street incurred damage to walls. In addition to the wall damage, the building had some of its windows shattered and several unoccupied offices damaged. Pieces of the main rotor blades were observed to be imbedded and/or partially protruding from the walls. The main rotor blades had also severed tree branches, which comprised some of the debris that was in the street .

MEDICAL INFORMATION

The copilot tripped on the sidewalk while exiting the helicopter and broke his left arm, and the remaining crewmembers on board the helicopter incurred minor injuries.

TESTS AND RESEARCH

An official with the Florida Department of Transportation (FL DOT) stated that on September 5, 2001, she conducted an inspection of the Miami Children's Hospital helistop, and as a result of the inspection, issued a helistop license to Miami Children's Hospital to operate the helistop for the period of April 1, 2001 to March 31, 2007 inclusive. In addition to the required inspection, the official stated that as a matter of policy she also performed an inspection once a year. The official also said that during the effective period of the helistop license, if conditions change to reduce the helistop's obstacle clearance requirements, it is the helistop

owner/operator responsibility to ensure compliance with the obstacle clearance requirements in order for the helistop license to remain valid.

On September 5, 2002, an official with FL DOT and a FAA inspector examined the Miami Children's Hospital helistop and noted that a significant amount of changes had taken place since the last helistop inspection. She stated that the hospital had undergone significant expansion, and in addition to construction associated with the expansion, an elevated helipad was also being constructed. The FL DOT official stated that as a result of the construction, she requested that Miami Children's Hospital conduct a survey to determine whether required clearance requirements to retain the helistop license had changed.

The Vice President/Chief Nursing Officer of the Miami Children's Hospital stated that after the accident, the management of Miami Children's Hospital contracted with a survey company to have the helistop surveyed. The Vice President/Chief Nursing Officer further stated, that upon receipt and review of the survey results from the survey company, it was the impression of the management of the Miami Children's Hospital that the clearance requirements had not been met. The Vice President/Chief Nursing Officer stated that due to the construction/expansion, Miami Children's Hospital management had voluntarily suspended helicopter operations at the hospital, until the elevated helipad was completed and could be used for helicopter operations.

The NTSB reviewed FAA records pertinent to the management/oversight of Title 14 CFR Part 135 operator, and the records showed no documentation of FAA reviews and/or oversight of flight operations at the Miami Children's Hospital's helistop. In addition, an FAA inspector stated to the NTSB that Air Methods Inc., current operator of the helicopter for Miami Children's Hospital, had recently won the contract, having taken over from another company, and added that the FAA had not conducted any evaluation/oversight of the operation as of yet, since it was a new operation.

ADDITIONAL INFORMATION

On August 31, 2002, the NTSB released the accident helicopter to Mr. Steve Smalley. President, Air and Sea Recovery Inc.

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	39,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 26, 2002
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 26, 2002
Flight Time:	6100 hours (Total, all aircraft), 4000 hours (Pilot In Command, all aircraft), 65 hours (Last 90 days, all aircraft), 27 hours (Last 30 days, all aircraft)		

Co-pilot Information

Certificate:	Commercial	**Age:**	32,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; 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 single-engine; Helicopter; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	April 10, 2002
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 16, 2002
Flight Time:	2890 hours (Total, all aircraft), 50 hours (Total, this make and model), 1400 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 21 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Sikorsky	**Registration:**	N15460
Model/Series:	S76A+	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	760223
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	AAIP	**Certified Max Gross Wt.:**	10800 lbs
Time Since Last Inspection:	32.7 Hrs	**Engines:**	2 Turbo shaft
Airframe Total Time:	13372.1 Hrs at time of accident	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	Arreil 1S
Registered Owner:	Variety Children's Hospital	**Rated Power:**	658 Lbs thrust
Operator:	AIR METHODS CORP	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	Miami Children's Hospital	**Operator Designator Code:**	QMLA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MIA,8 ft msl	**Distance from Accident Site:**	
Observation Time:	11:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 3000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 9000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	32°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Miami, FL	**Type of Flight Plan Filed:**	Company VFR
Destination:	Marathon, FL (MTH)	**Type of Clearance:**	None
Departure Time:	12:19 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Miami Children's Hospital Heli	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious, 3 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 3 Minor	**Latitude, Longitude:**	25.740278,-80.294441

Administrative Information

Investigator In Charge (IIC):	Lovell, John
Additional Participating Persons:	Daniel D Castro; FAA FSDO; Miami, FL
Original Publish Date:	June 30, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=55661