

## ARE PLANES WE FLY MORE AT RISK?

## Cry for help as tail-heavy plane takes off

## Flight 5481 from IA

"We're figuring it out," Leslie said. "We don't think we have to take anything."

It was 8:24 a.m. Leslie started the second engine. Gibbs was still adding.

"I'm sorry," he said, "I'm operating really slow ... this morning...."

Leslie often let her first officers complete the preflight checks. It helped train them. They did her job, and she boarded passengers for them. Some pilots wouldn't do that, but Leslie didn't mind.

"...I didn't know we were gonna be 19 and overloaded," she told Gibbs, "or I wouldn't have ... (made) you do all this."

"No, I got ya."

After five minutes of figuring and refiguring, Gibbs finished. By his calculations, the plane plus fuel, baggage and passengers weighed 17,018 pounds, 102 pounds under the maximum.

"So we're cool," Leslie said.

"So yeah."

As it turned out, investigators later estimated, the plane was about 280 pounds overweight.

A load that heavy probably would not have mattered if they had been flying any other Beech 1900D.

## Please, please, give me a call

For years, Michael Sullivan avoided commuter airplanes.

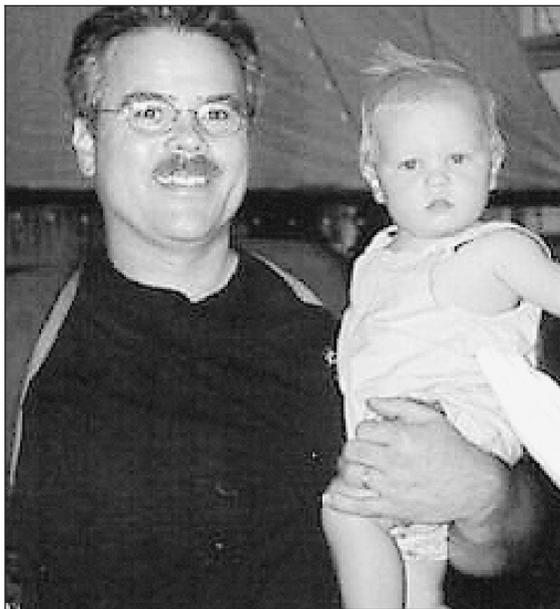
They were cramped, and jerked and shuddered so much he couldn't work. He owned Cape Software, and flew a lot. For years, he left the night before if that was the only way to get a seat on a jet.

Then he and Donna had children and his priorities changed. They had struggled for 10 years to have a baby, through seven in-vitro fertilizations and more than \$100,000 in medical costs. Eleni was 3 1/2, Sammy, 1 1/2. If a commuter flight meant he could stay home an extra night and tuck them into bed, Sullivan took it.

Before dawn that morning, he had left their home in Newtown Square, Pa., outside Philadelphia, without waking Donna or the children to say goodbye.

He'd be back the next day.

He got a seat on the last row of Flight 5481 and Donna is certain that before he buckled his seat belt, he was already talking with the guy next to him, mortgage banker Steven Krassas from Virginia. Sullivan, who was 44, loved



Michael Sullivan, a passenger on the plane, devoted weekends to his wife, Donna, and their children, Sammy, shown here, and Eleni.

meeting people. He was a chemical engineer by training, but in college he danced, played tennis, drove a Datsun 280Z, and friends nicknamed him Disco Sully.

A couple of hours after he left, Donna woke and wandered into the kitchen. He had set up the coffee machine for her. All she had to do was turn it on. His cell phone lay nearby, and she said the sight of it made her feel sick. Michael always took his cell phone. He strapped it to his belt. Always. That way, he could call her six times, eight times, 10 times even. He could call her after his flight landed, between meetings, before the flight back home.

He knew how terrified she was of flying.

Once on a stormy afternoon when they lived in Texas and she was in Dallas on business, Michael flew up from Houston just so he could hold her hand on her flight home.

You have a better chance of winning a lottery, he had told her, than of being in a plane crash.

Donna e-mailed him, worried. She said it was the only time she ever e-mailed Michael in 14 years of marriage: You forgot your cell phone, she wrote. Please, please, give me a call when you land. Let me know you got there safely.

## The Capt. Leslie standard

In the cockpit, Leslie checked over the weight and balance fig-

ures.

She always checked behind her first officer. In flight school, other students joked about the "Capt. Leslie Standard": Know your material well, avoid problems.

She had wanted to be a pilot since she was a little girl and a next-door neighbor took her for an airplane ride. Her parents thought she would change her mind, but she persisted. She was named Outstanding Woman Student at Louisiana Tech and taught flight school there before she took a job with Air Midwest.

Now that she was older, 25, she wanted to marry and have children, too. Her boyfriend, Brent Brakhop, flew as a first officer with Air Midwest and, because they were away from home so much, they had planned to wait to marry until they got jobs with a bigger airline.

But two days earlier, he had bought her a diamond engagement ring.

They drove together to the airport that morning.

He was napping in a quiet corner of the terminal, waiting for his flight, while Leslie and Gibbs figured out the weight and balance.

## Enjoy the flight

Out the window, Gibbs noticed someone staring up at the plane and laughing.

The Beech 1900D looked overloaded. It sat up as if at attention,



Capt. Katie Leslie's goal, her mother said, was to be a captain at a major airline. "She believed," Marcy Leslie said, "in working hard."

## How This Story Was Reported

The direct quotes in this four-day narrative came from the cockpit recorder recovered after the crash of Flight 5481. Details about the airplane and its fatal flight came from the flight data recorder and from testimony before the National Transportation and Safety Board. Other sources of information included US Airways, Raytheon Aircraft Company, the National Weather Service, and interviews with pilots, eyewitnesses, mechanics, investigators, lawyers, and with families and friends of 19 of the 21 victims.

tail down, nose high.

"He's probably looking at our tail," Gibbs told Leslie, "like (it's) 'bout ready to hit the ground right now, with all the bags back there...."

They laughed, then got back to work.

"Start checklist," Gibbs said. "Avionics master?"

"On."

"Engine anti-ice?"

"On."

At 8:30 a.m., Gibbs radioed air traffic control.

"... Air Midwest fifty-four eighty-one's ready to taxi out...."

"... Proceed to the north ramp..." air traffic control radioed back.

Carla Atchley, a ramp agent, grabbed a pair of orange wands and directed the plane away from Concourse E.

She says she saw Capt. Leslie wave goodbye.

## Heading back to college

As the plane taxied toward runway 18R, a recorded message briefed passengers again about emergency exits, seat belts, oxygen masks. "Once again, welcome aboard," the recording concluded. "We ask that you sit back, relax and enjoy the flight."

It was the last leg of a long trip for Christiana Shepherd.

She was 18 and exhausted.

She had spent the night before in a chair in Boston's Logan Air-

port, after flying from the Azores islands off Portugal, where her parents worked as missionaries. She was on her way back to Bob Jones University, a Christian liberal arts college in Greenville.

My problem, she once told her mother, is I just don't have enough lives to do the things I want to do.

She wanted to be an interior designer. She wanted to be a guidance counselor. She wanted to be a youth pastor's wife. She wanted to write books and write poems and paint pictures, and travel and nurse the sick and help the poor.

Tereasa Shepherd worried about Christiana traveling alone. When she had arrived in Boston, Christiana telephoned her aunt in Pennsylvania, and her aunt called her mom: Christiana is safe. She phoned her aunt in the morning before flying on to Charlotte.

She promised to telephone

again when she got to Greenville.

## Time to fly

At 8:45, air traffic control radioed.

"Air Midwest fifty-four eighty-one, runway one eight right, taxi into position and hold."

"Position and hold," Gibbs radioed back.

Leslie and Gibbs finished the preflight checks, then chatted as they waited for the next instruction.

Air traffic control radioed at 8:46.

"Air Midwest fifty-four eighty-one, turn right, heading two three zero, cleared for takeoff."

It was time to fly.

"Two three zero," Gibbs radioed back. "Cleared for takeoff. Air Midwest fifty-four eighty-one."

"Set takeoff power, please," Leslie said to Gibbs.

The engines revved and roared and the small plane shook.

"Power is set..." Gibbs said.

The plane hurtled down the runway.

"Eighty knots, cross checked..." he said.

"V-one ...V-R," Gibbs said, a signal to Leslie to pull back on the steering yoke. The nose of the plane lifted up.

"V-two..." Gibbs said, confirming the climb-up speed. "Positive rate."

"Gear up," Leslie told him.

A hydraulic motor began retracting the wheels.

Without warning, the nose of the plane pitched up.

"Oh!" Leslie cried out.

She pushed on the steering yoke, investigators believe, trying to bring the nose down to a safe flying level. The plane kept climbing, nearly straight up.

"Help me!"

## TUESDAY

The pilots struggle frantically to save US Airways Express Flight 5481.

## Can airlines control off-site work?

## Planes from previous page

"...And we hold everyone accountable in that regard, and we produce a very fine product and provide excellent services."

Four days after the 1996 memo was written, an Airborne Express DC-8 that Timco had just overhauled crashed in the Virginia mountains during a test flight, killing all six crew members and mechanics aboard.

NTSB investigators blamed the crash primarily on the pilots, but said an inoperative stall warning system contributed. The NTSB did not find Timco at fault.

Lawsuits filed by three of the victims' relatives alleged that Timco improperly rigged the jet's flight controls, which would have prevented the plane from responding correctly to the pilots' commands. Timco denied the allegation.

The lawsuits, which also named the aircraft manufacturer as a defendant, were settled.

Timco says its work had nothing to do with the crash.

"There is nothing I have seen that would indicate ... that Timco was in any way at fault here," said company attorney Elizabeth Taylor McHaffey.

## Oversight, support is key, no matter where work is done

American Airlines says it outsources about 20 percent of its maintenance work, a lower percentage than most airlines. It has recently brought some work back in-house. The airline prefers to do its own maintenance when costs are competitive, said spokesman John Hotard.

"I think the biggest advantage is fairly simple. Doing your main-

tenance in-house gives you much more control over the product, from quality control to meeting production goals," Hotard said.

Other airlines say they closely watch repair stations to ensure good work.

A massive regulatory fine spurred America West to work harder at maintenance, said Jeff McClelland, the airline's chief operating officer.

In 1998, the FAA fined the airline a record \$2.5 million for, among other things, failing to oversee contractors working on its planes.

McClelland arrived at America West the following year, and found that for each plane sent to a repair station, the airline had two employees monitor the work.

Now, to ensure high-quality work, the airline assigns four to seven employees at repair stations for every plane worked on, McClelland said. "We wanted to make sure we were doing it right," he said.

America West relies on repair stations for most of its maintenance.

Fed Ex operates 638 aircraft, outsourcing maintenance on the vast majority. The air carrier is known for keeping a close watch on its contractors.

Quality assurance staffers at FedEx say that on rare occasions they have found so many mistakes on planes maintained by a third-party contractor that they halted the jobs.

"We took a hard look at airplanes, and we stopped work," said Bob Rachor, vice president for safety and airworthiness. "Our executives have gone down and had a face-to-face, put the contract on the line."

Federal regulations hold air-

lines responsible for ensuring the quality of repair stations' work. Many airlines say they take pains with this duty.

But critics say most airlines aren't sending enough of their own inspectors or managers to repair stations.

"They're paying for work to be done," says NTSB board member John Goglia. "Yet they're not providing the level of oversight to ensure they're getting what they pay for, never mind to ensure it's complying with the federal regulations."

Monitoring the caliber of work becomes particularly difficult when repair stations in turn hire subcontractors, as they frequently do.

The Northwestern study found that while all repair stations they examined used subcontractors, it wasn't standard practice for them to tell the airlines.

At the West Virginia maintenance shop that worked on the Air Midwest plane that crashed in Charlotte, a maintenance contractor named Raytheon Aerospace relied on a Florida subcontractor to supply mechanics.

The FAA official in charge of monitoring maintenance at Air Midwest told crash investigators he was unaware that mechanics had come from a subcontractor.

## Workers' mistake led to hole in airplane, injury, NTSB ruled

On Aug. 19, 1998, Don Parr was aboard a commuter plane that had just taken off from Denver International Airport when he closed his eyes to get some rest.

He heard a bang. Then "something hit me in the side of my head," Parr said.

He looked around and saw a hole in the side of the plane, and

fractured glass from an overhead light in his lap.

"I got up and told (the pilot), you got a hole in the damn airplane," said Parr, a retired energy company manager headed home to Rock Springs, Wyo. "He saw the blood streaming down my face and said, 'Oh s---.'"

The Beech 1900D turboprop, operated for United Express by Great Lakes Aviation, made an emergency landing in Denver that evening.

The NTSB discovered that a metallic piece called an erosion shield had flown off one of the plane's propeller blades and punctured the fuselage. A piece from the erosion shield knocked out an overhead light, and flying debris hit Parr in the cheek and temple.

A month earlier, the NTSB found, contract workers made a critical maintenance mistake: They improperly mixed the epoxy that bonded the erosion shield to the propeller blade.

Only 10 percent of Great Lakes Aviation's maintenance work is outsourced, said Doug Voss, the airline's chairman and founder. In-house work allows managers to understand the root causes of problems, he said.

"Not only do you fix the problem, but you figure out why it broke," he said.

Parr said he wasn't seriously hurt. But if he had turned his head in a different direction, he could have lost an eye.

"I understand they have to outsource to get a lot of the work done," Parr said. "But they need to follow up, and make sure they're doing it right. ...When you're talking about people's lives, you'd better damn well make sure you have some good facilities."

## Special Report | A Summary

TODAY | Outsourcing maintenance saves airlines millions.

But The Observer has found that the contract maintenance repair shops, which usually employ less-experienced mechanics than those who have historically worked for airlines, get far less attention from federal regulators.

The Federal Aviation Administration last year carried out three times as many inspections at airlines as at third-party repair stations. That's even though third-party contractors perform almost half of all maintenance, up from about 37 percent in 1996.

Those who run repair stations say they do first-rate work.

Studies and experts have raised concerns, though, concluding that it's harder for airlines to ensure quality maintenance work when they farm it out to contractors.

SUNDAY | Maintenance mistakes increasingly play a role in fatal airline accidents, but the industry hasn't made fixing the problems a priority.

TUESDAY | Mechanics say cost-cutting pressures make it harder for them to do their jobs right.

WEDNESDAY | Aviation safety experts offer ideas to improve maintenance.

## Special Report Staff

## REPORTERS

Ames Alexander (704) 358-5060  
aalexander@charlotteobserver.com

Ted Reed (704) 358-5170

treed@charlotteobserver.com

Elizabeth Leland (704) 385-5074

eleland@charlotteobserver.com

## DATABASE EDITOR

Ted Mellnik (704) 358-5028

tmellnik@charlotteobserver.com

## COPY EDITOR | Shelly Shepard

## DESIGNER | Michael Tribble

## NEWS GRAPHICS EDITOR | Wm. Pitzer

## PHOTO ILLUSTRATION | L. Mueller

## RESEARCH | Sara Klemmer

## EDITORS | Cheryl Carpenter, Marion Paynter (research), Tom Tozer, Peter Weinberger (photography).

## PROJECT EDITOR | Gary Schwab

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