NASA pilots fly into eye of storm

Researching strong bursts of wind

By Shirish Date
The Orlando Sentinel

ORLANDO, Fla.

The thundercloud towered menacingly to the left: dark, angry and the bane of every pilot’s existence.

Inside lurked a violent downdraft — something most planes carefully avoid. Instead, Dick Yenni and Mike Phillips quickly changed course Thursday and nosed NASA’s specially outfitted 737 toward the danger.

Within seconds, heavy raindrops streaked the cockpit windows and the jet lurched violently as it roared through the storm just 800 feet above Bithlo, Fla.

“Wind is shifting around to a tailwind, as it should,” Yenni reported over the intercom, confirming theories about the downdraft’s effects just as the plane took a stomach-turning plummet.

“We lost about 75 feet there.”

Yenni and his 27-member crew from NASA’s Langley Research Center had found what they were looking for: a “wind shear microburst,” a downward rush of air that can literally knock an airplane out of the sky.

Yenni and his colleagues chase down and fly through them — like children splashing through puddles — hour after hour, all in the name of research.

Microbursts typically last no longer than 10 minutes, and they are generally only a mile or two wide. They have, nonetheless, killed more than 500 people in two dozen crashes since 1964.


“They can be small, they can be intense and they can be lethal,” said Roland Bowles, manager of a joint NASA-Federal Aviation Administration project to test instruments warning pilots of microbursts.

The $20 million, six-year project has resulted in more than 100 airports across the country — including Orlando International Airport — getting ground-based, wind shear sensing systems. In addition, the Orlando and Denver airports have received a state-of-the-art, experimental radar to detect downdrafts. More than 40 airports will have that system in place by 1994.

But having airports look for wind shear can’t substitute for having each plane search the air in front of it as it flies, researchers said.

That is why NASA planes are testing sensors — which can see a microburst miles away, giving pilots 20 to 40 seconds of warning so they can steer clear — for

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three weeks this month in central Florida, the thunderstorm capital of the country.

The FAA has required airlines to install the devices on all passenger planes by the end of 1995.

"It puts the information at a pilot's fingertips," Bowles said of the three sensors attached to NASA's 737.

They are:

- LIDAR, which is analogous to radar except that it uses laser beams instead of radio waves. The laser measures air currents by detecting the movement of minute particles, like dust, suspended in the air.
- Microwave radar, which similarly discerns air movement by detecting the movement of raindrops.
- Infrared light sensors, which measure changes in air temperature to find the downdrafts, which are generally much colder than the surrounding air.

All three instruments are monitored on video-game-like screens mounted in a second cockpit a few yards behind the real one, where the first-class seats used to be. There, pilot Lee Person took control of the plane to zero in on the radar-generated targets, which represented microbursts popping up in thunderstorms from Bithlo to St. Cloud, Fla.

"It flies real good from back here," Person said as he swerved to dodge other planes and 1,500-foot-tall radio towers.

As the plane entered each microburst, Person turned over control to Phillips and Yenni. That allowed the two pilots in the traditional cockpit — who could see out the front window — to fly the plane to safety.

Phillips and Yenni also were in charge of informing the air traffic control tower of the plane's every move.

"It was a real good day," deputy project manager Mike Lewis said after two hours of bumpy flight through about a dozen downdrafts.

Bowles, the project manager, said he is optimistic that this month's research will soon prevent crashes like that of Delta Flight 191. "It's going to save lives," he said. "I guarantee it."

Wind burst shatters windshields

Daily Press

FORT EUSTIS

A sudden, strong burst of wind shattered more than 50 car windows, lifted debris off the ground and moved trash containers around a Fort Eustis parking lot Thursday afternoon.

The microburst did minimum damage to the parking lot area outside the Army Aviation Logistics School, a Fort Eustis spokeswoman said.

The microburst also moved storage sheds in a housing area south of the parking lot at Building 705 where it initially touched down. Base personnel have filed more than 59 incident reports, and more were coming in, said military police Staff Sgt. George Yazvac.

A microburst can occur when a cold downdraft of air and rain displaces warm air near the surface.

There were no reports of injuries.

Though there were reports of a tornado touching down at the site, weather radar indicated only high winds, said Chief Master Sgt. Harry Houwen, the base's weather station chief.

Houwen added it isn't unusual for strong gusts of wind to spread out, like water pouring across a flat surface, and cause the type of damage that occurred at the parking lot.