



## Aviation Human Factors Industry News

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### Poor maintenance, 'sloppy' corporate culture blamed for fatal Chalk's crash

Poor maintenance and a "sloppy" corporate culture that didn't emphasize safety likely led to the right wing breaking off a Chalk's seaplane that crashed off Miami Beach in December 2005, killing all 20 on board, the National Transportation Safety Board said on Wednesday.

In determining a "probable cause," the board also blamed the Federal Aviation Administration for lax oversight over the small Fort Lauderdale-based airline. Notably, the FAA's principle inspector over the carrier said he was "comfortable" with Chalk's maintenance program even though there were numerous red-flags problems, safety board members said.

Among them: The airline repeatedly ignored fuel leaks and fuselage cracks and failed to keep adequate maintenance records.

"Their safety program was inadequate," Mark Rosenker safety board chairman, said. "It glares at you, this was a poorly operated airline."

Shortly after Chalk's Ocean Airways Flight 101 took off from the Port of Miami at 2:39 p.m. on Dec. 19, 2005, its right wing snapped off. The seven-ton Grumman Turbo Mallard burst into flames and plunged into the ocean near a jetty. Of the 18 passengers, including three infants, most were from Bimini, the plane's destination.





It was Florida's deadliest airline accident since the 1996 crash of a ValuJet jetliner in the Everglades near Miami, killing all 110 on board.

Maintenance problems were suspected early on because metal fatigue cracks were found at the roots where both wings of the Chalk's Mallard were attached to the fuselage. The safety board found a 16-inch-long crack in the skin of the fuselage, a telltale sign of potentially serious structural problems.

The plane's wings also had numerous corrosion problems, another strong indicator of underlying structural problems.

Safety board investigators said they found evidence that fatigue cracking in the plane's frame existed long before the crash occurred; between 1991 and 2000, the right wing was repaired three times for corrosion problems.

During a four-hour hearing in Washington D.C., safety board members further chastised Chalks for underestimating the weight of passengers, using an average of 165 per person when federal guidelines called for using 190 pounds. That likely resulted in the airline routinely flying planes over maximum allowable weight and could have weakened the plane's integrity, safety board members said.

"I question how often this airplane exceeded its gross weight," said safety board member Debbie Hersman.

Adding to stress on the seaplane was its advanced age, it was 58 years old, and the fact that it was frequently pounded by high waves during more than 40,000 water takeoffs and landings, said Bill English, the investigator in charge of the accident.

"The ocean and the waves do increase the stress on the airplane," he said.

The safety board said the FAA should have been more suspicious of a number of operational problems that likely compromised the airline's safety. A main clue was that Chalk's was in financial distress, losing more than \$1 million in the years before the accident.

The airline also had undergone a number of management changes and overloaded some of its managers to the point they could not properly perform administrative duties, board members said.

For instance, Michele L. Marks, 37, of Boynton Beach, captain of the doomed flight, was named the airline's director of safety in the months prior to the accident yet was too busy flying long days to fulfill her duties, Hersman said.

Further, in the year before the accident, Chalk's pilots became increasingly concerned about what they felt was an anemic maintenance program, complaining the staff of mechanics was trimmed. Three captains resigned, with one of them saying there was "blatant neglect."

Board members said Chalk's operational problems likely existed for years and yet the FAA failed to act on them. For example, a U.S. Department of Transportation audit in 2004 found that Chalk's shifted passengers to other carriers when it couldn't accommodate them, even though that was a prohibited practice.

"There were a lot of indicators before that accident happened that there were a lot of problems at that airline," Hersman said.

The board further blamed the FAA for **permitting loopholes** in federal laws governing aging aircraft. Despite a congressional law approved in 1999, **Chalk's was not required to give the vintage seaplane intense maintenance scrutiny.**

The plane that crashed was built in 1947 and converted for airline operations in 1979, when Chalk's hired Frakes Aviation of Cleburne, Texas, to equip it with turbine engines and increase the number of seats from 10 to 17. The seaplane was put into service in 1980.

After the accident, the Federal Aviation Administration prohibited the 37 remaining Mallards in the United States from flying unless a strict repair and inspection schedule was met. That included Chalk's four remaining planes. Since then, some Mallards have resumed flying.

Using land-based commuter airliners rather than seaplanes Chalk's resumed flying late last year. The airline now flies from Fort Lauderdale and West Palm Beach to Freeport, Marsh Harbour, Bimini and Nassau, according to its Web site. Chalk's promotes itself as the nation's oldest operating airline, founded in 1919. Chalk's officials were not immediately available for comment.

## [NTSB Blames 2005 Chalk's Accident On Undiscovered Structural Fatigue](#)

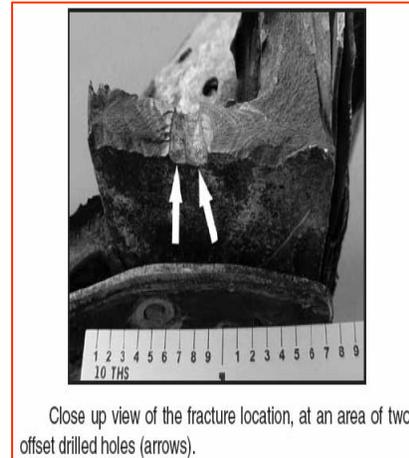
Board Says FAA Failed To Fix Problems With Airline's Maintenance Program The National Transportation Safety Board issued its Probable Cause report Wednesday on the December 2005 loss of a seaplane in Miami, FL.

The Board ruled the fatal crash was caused by **"the failure and separation of the right wing**, which resulted from **(1) the failure of Chalk's Ocean Airways' maintenance program to identify and properly repair fatigue cracks** in the wing, and **(2) the failure of the Federal Aviation Administration (FAA) to detect and correct deficiencies in the company's maintenance program."**



"This accident tragically illustrates a gap in the safety net with regard to older airplanes," said NTSB Chairman Mark V. Rosenker. "The signs of structural problems were there -- but not addressed. And to ignore continuing problems is to court disaster."

The Board found neither the performance nor the appearance of the airplane would have provided a warning to the flight crew of the right wing's imminent failure. The accident airplane, manufactured in 1947, was operating within its certificated design envelope and carrying normal aerodynamic loads when the wing separated. Preexisting damage to wing structural components would not have been visible to the flight crew prior to departure. There was nothing the crew could have done to regain control of the airplane after the in-flight separation of the wing, the Board said.



The Board noted that the accident airplane had a history of recurring fuel leaks near the area where the right wing separated, that were indicators of internal structural damage. Although some repairs were attempted, many were ineffective in that they did not properly restore the load-carrying capability of the wing structure. The failure of Chalk's to identify and properly repair fatigue cracks in the wing, and the numerous maintenance-related problems found on the accident airplane and another company airplane, demonstrated that Chalk's maintenance program was inadequate to maintain the structural integrity of the company's fleet, the Board said.

Since the FAA has indicated that it intends to address the identification of age-related problems for older airplanes through current operational safety programs - instead of a dedicated effort -- the Board has classified this recommendation as "Open-Unacceptable Response."

"Does it make sense," said Chairman Rosenker, "that rules designed to deal with the problems of airplanes as they age would exclude the oldest ones in the inventory?"

A synopsis of the Board's report, including the probable cause and safety recommendations, is available on the NTSB website.

## 737 Shanghai airlines mechanic working on the engine got sucked in.

Maintenance error/pilot error is not the cause of the accident. The cause lies in whatever it was that interfered with the individual at the time he or she was performing the task. What was the cause of the loss of life of this technician? Was it due to complacency, lack of knowledge, distraction, fatigue, and loss of situational awareness or a combination of any of the above?

We will never live long enough to make all the mistakes so let's learn from others.



## Airport Cargo Worker Killed at Newark

### Cargo Worker Killed at Newark Airport

NEWARK, N.J. -- A cargo worker at Newark Liberty International Airport died early Tuesday morning after he was struck by a 750-pound piece of equipment used to stabilize the rear section of a plane during loading and unloading.

Timothy Gallagher, an employee of Worldwide Flight Services, was towing a tailstand for an Eva Airlines Boeing 747 when the 16.5-foot-tall structure fell over and struck him in the head and upper torso, said Pasquale DiFulco, a spokesman for the Port Authority of New York and New Jersey, which operates the airport.



The incident happened just after midnight, about 12:25 a.m., outside Terminal B where planes are positioned when they are loading and unloading.

He was pronounced dead at Beth Israel Hospital in Newark at 1:22 a.m., DiFulco said.

The Port Authority is investigating the accident, and the U.S. Occupational Safety and Health Administration has been briefed, he said.

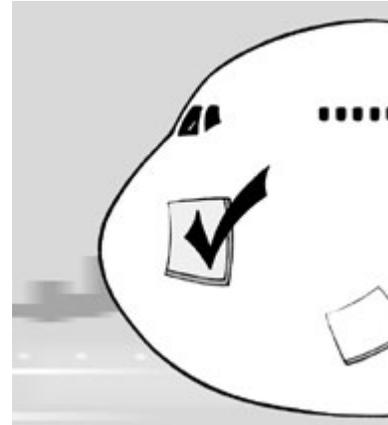
Officials believe Gallagher was about 40 years old, and his last known address was in Jersey City.

## [Not a Noise You Want to Hear at 18,000 Feet](#)

Like most business travelers who fly a lot, Wade Cornett is accustomed to routine changes in sounds on an airplane — the whine of engines on a climb, the whump of the landing gear, the rattle of the airframe in turbulence.

But about 20 minutes after takeoff from Syracuse, N.Y., on May 18, he was abruptly awakened while dozing in his first-class seat.

“Suddenly I heard a loud pop followed by shhhhhh — the sound of air escaping. A few seconds later, the oxygen masks all dropped down. I knew that was not good,” said Mr. Cornett, a technician from Rome, N.Y., who works on industrial boilers.



The incident was on Northwest Airlines Flight 1411, a DC-9 with 95 passengers aboard, bound for Detroit from Syracuse. The aircraft had climbed to 18,400 feet at 1:03 p.m. when the pop was heard and the cabin lost pressure, according to data on FlightAware.com. A minute later the DC-9 had dropped to 16,100 feet. Four minutes later, it began leveling off at about 10,300 feet.

“After we put the oxygen masks on, the pilot said we’d lost pressurization, maybe from a problem with the cargo door, and we had to get down fast to where we didn’t need pressurization,” Mr. Corbett recalled.

“Once we got level, he came back on and said they smelled smoke in the cockpit, and he was going to get us down as quickly as he could.”

The DC-9 made an emergency landing in Buffalo. No one was hurt. There was a hole, 12 inches in diameter, in the fuselage toward the front of the aircraft.

Northwest says it is investigating. “I don’t have anything more at the moment,” a Northwest spokesman, Roman Blahoski, said late Friday. He said he would let me know when Northwest learned the cause of the hole.

The Northwest fleet has a large number of older aircraft, though pilots and mechanics say an old airplane, properly maintained, is as airworthy as a new one.



The McDonnell Douglas DC-9s first entered service in the mid-1960s; later models were introduced through the 1970s. With more than 100 DC-9s in its fleet, Northwest is by far the largest operator of the jets, whose values, the trade publication Aircraft Value News said in January, are at “scrap levels.”

Aviation authorities that I talked to said they thought it unlikely that something like metal fatigue alone could cause a hole to open up on a fuselage.

There was a similar discovery in Seattle in late 2005, when a baggage-loader vehicle bumped and dented an Alaska Airlines MD-80 jetliner before takeoff. The driver, who worked for a subcontractor, said he did not think the incident was serious enough to report, according to the National Transportation Safety Board.

Twenty minutes after the plane took off, the dent had opened into a foot-and-a-half hole. The cabin depressurized, the oxygen masks dropped and the plane made an emergency return to Seattle.

Other incidents of damage to aircraft by baggage loaders and other ground equipment have been reported since then.

But pilots are also worried about safety in a system stretched tight, with airline work forces reduced.

“Airline manning has been cut to the bone and then some,” said G. Bruce Hedlund, a pilot for a major airline.

Routinely in the past, small maintenance problems that do not “in and of themselves compromise safety,” were flagged on a log for prompt attention after the flight. Those flags are more numerous now, Captain Hedlund said, speaking generally and not about any specific incident or airline.

He said there were too few mechanics to keep pace with routine maintenance.

“They want to keep the airplanes flying.”

Mr. Cornett, meanwhile, credited the captain with maintaining calm in the cabin of Northwest Flight 1411.

“He was smooth. You could tell he’d been around. If he had sounded nervous, I think it would have been a whole different ballgame. He said, ‘The engines are all right, the wings are all right, everything is fine with the plane,’ as he took it down to where we didn’t need oxygen anymore,” Mr. Cornett said.

Of the damage to the fuselage, he said, “It definitely wasn’t a seam, it was a hole. Thank God it didn’t get bigger in the air. We might not be having this conversation.”

## NTSB to Announce Cause of Comair Crash

LEXINGTON, Ky. --

The National Transportation Safety Board said Tuesday it expects to rule in July on a probable cause of the crash of a Comair flight that killed 49 people.



In a statement, the board announced tentative plans for a public meeting on July 26 in Washington, and is expected to include the NTSB's safety recommendations and findings concerning the cause of the Aug. 27 crash.

The board had indicated it wanted to finish the investigation within a year after the crash. It opted against holding a public hearing that would include subpoenaed witnesses and could have taken much longer.

Some family members and aviation experts have said they were surprised there would be no public hearing considering all of the safety questions that emerged after the crash.

The plane was barely airborne when it took off from a too-short runway before dawn and crashed into farmland. Only the first officer, James Polehinke, survived.

## The Game of Life

Angrily, the manager in the movie "Bull Durham" asserts, "This is a simple game. You throw the ball! You hit the ball! You catch the ball!"

I wish baseball was that simple, but many of its nuances go unnoticed. I see baseball as a complex and complicated sport on many levels, much like life.

In fact, I find that elements and lessons in life, like foresight, instinctual and repetitious response, success and failure, communication, and trust, transcend and intermingle with the fundamentals of baseball - a parallel to life in many ways.





One day, following an amiable disagreement with my friend over which Major League team is the best, I said with little thought, “Baseball seems to resemble - mimic - life sometimes.”

“Yeah,” he agreed. “You can get lucky, but it all comes down to whether you can or can’t catch a fly ball, hit a curveball, whatever. That way you can affect the whole team and what happens in a game.”

Then, our conversation paused for a moment before heading off on a tangent, but this thought was still in my mind a few days later when I spoke with another friend.

“What is it about baseball that appeals to you, Joey?” I asked.

“Baseball has human error in it,” he responded after a moment. “Players make mistakes. Umpires are bound to make a wrong call and there’s no instant replay. You can’t go back and change a call.”

“Yeah, true. You can’t go back and change what happened ... whether it was right or wrong.”

As I prepare physically and mentally for a game of no particular importance, I reflect on life and on baseball. I had made the trek from the car to the ball field countless times, bat bag and other equipments weighing me down. Cleats click on the pavement, transitioning to a nearly inaudible thud with each step on the grass, its sweet smell overwhelming my nostrils with every breath.

But it’s game time. Anxiety melts away as I take my position at second base. I plan between every pitch, going over every possibility: If the ball’s hit here ... there ... then I move ... throw ... Once the balls in play, it’s too late to think. I have only seconds to react, yet time seems to stretch into a state of slow motion. It comes down to that practiced, repeated, instinctual motion of response, field and throw the ball. Then I realize life comes, in spite of my plan, and I must act and react in the moment.

As the inning ends, new challenges await me.

I receive signs when I bat or run bases as hand gestures, vocal aid and direction during plays, a nod of acknowledgement for a job well done. Without this vital communication, teamwork just wouldn’t be possible and the game wouldn’t work. I’m not able to read minds. Although there is trust that each person will make their play, catch, hit, and throw the ball, I need to talk and communicate; collisions, missed plays, and errors are all born from silence and misunderstanding. So this game mumbles on.

Following the final “out,” bat bags are repacked in preparation for another day. I stare, transfixed, at an empty field once again, no longer manicured to perfection. The lines are blurred, the grass is no longer patterned. **The sounds, lessons, and images remain in my mind** long after the lights turn off, leaving this haven to glow in the iridescent glow of the moon. This sport - this place - is more to me than a few simple swings of the bat, throws across the diamond, or routine grounders. It seems to have a **life** all its own.

## Midnight Shift Nugget

### Eat Watermelon

Summer heat and working the back side of the clock can add to your **fatigue** if you don't stay **hydrated**. Feeling thirsty means that you are already **dehydrated**. Pack your lunch with a 1-inch slice of **watermelon**, it a great source of **hydration**. It contains 92% water and as much prostate-protecting lycopene as four medium tomatoes.



## A healthier, fitter YOU — Simple strength training tips

If you've never lifted weights in your life — and many people haven't — why should you start now? The answer is simple: Muscle tissue, bone density, and strength all dwindle over the years. So, too, does muscle power. **These changes open the door to accidents and injuries that can compromise your ability to lead an independent, active life.** Strength training is the most effective way to slow and possibly reverse much of this decline.

Having smaller, weaker muscles doesn't just change the way people look or move. **Muscle loss affects the body in many ways.** Strong muscles pluck oxygen and nutrients from the blood much more efficiently than weak ones. That means any activity requires less cardiac work and puts less strain on your heart. Strong muscles are better at sopping up sugar in the blood and helping the body stay sensitive to insulin (which helps cells remove sugar from the blood). In these ways, **strong muscles can help keep blood sugar levels in check, which in turn helps prevent or control type 2 diabetes and is good for the heart.** Strong muscles also **enhance weight control.**



On the other hand, weak muscles hasten the loss of independence as everyday activities — such as walking, cleaning, shopping, and even dressing — become more difficult. They also make it harder to balance your body properly when moving or even standing still, or to catch yourself if you trip. The loss of power compounds this. Perhaps it's not so surprising that, **by age 65, one in three people reports falls.** Because bones also weaken over time, 1 out of every 20 of these falls ends in fracture, usually of the hip, wrist, or leg. The good news is that the risk of these problems **can be reduced by an exercise and fitness routine that includes strength training.**

### Beginner's simple strength boosting exercises

*A sturdy chair with armrests and athletic shoes with non-skid soles are all you need for these simple strength building exercises.*

#### Seated bridge

Sit slightly forward in a chair with your hands on the armrests. Your feet should be flat on the floor and slightly apart, and your upper body should be upright (don't lean forward). Using your arms for balance only, slowly raise your buttocks off the chair until nearly standing with your knees bent. Pause. Slowly sit back down. Aim for 8–12 repetitions. Rest and repeat the set.



#### Triceps dip

Put a chair with armrests up against a wall. Sit in the chair and put your feet together flat on the floor. Lean forward a bit while keeping your shoulders and back straight. Bend your elbows and place your hands on the armrests of the chair, so they are in line with your torso. Pressing downward on your hands, try to lift yourself up a few inches by straightening out your arms. Raise your upper body and thighs, but keep your feet in contact with the floor. Pause. Slowly release until you're sitting back down again. Aim for 8–12 repetitions. Rest and repeat the set.



#### Standing calf raise

Stand with your feet flat on the floor. Hold onto the back of your chair for balance. Raise yourself up on tiptoe, as high as possible. Hold briefly, then lower yourself. Aim for 8–12 repetitions. Rest and repeat the set.



## BY THE NUMBERS

### Passenger Vehicle Occupant Deaths - Night & Day

**44,443** The number of people who died on  
U.S. highways in 2005



Highways become deadlier after dark

**73** The percentage of victims who were  
occupants of a passenger vehicle

**3** The number of times higher the vehicle occupant fatality rate is at night\*

**3.3** The number of times more often alcohol was involved in nighttime as  
opposed to daytime fatalities

**45** The percentage by which use of lap/shoulder seatbelts cut the risk of fatality  
to front seat passengers in cars at all times

**60** The percentage by which use of lap/shoulder seatbelts cut the risk of fatalities  
to occupants of light trucks at all times

**30** The approximate percentage by which seatbelt use can vary by different parts  
of the day, from a high of 58% at 2 p.m. to a low of 30% at 2 a.m.

\* The number of deaths at night (15,294) and day (15,878) are about the same but  
because so many more miles are traveled during the day, the rate of fatalities at  
night is significantly higher.

Source: Varghese and Shankar, "Passenger Vehicle Occupant Fatalities by Day  
and Night," published in *Traffic Safety Facts*, National Highway Safety  
Transportation Administration, May 2007. [http://www-  
nrd.nhtsa.dot.gov/Pubs/810637.PDF](http://www-nrd.nhtsa.dot.gov/Pubs/810637.PDF)

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