

# Wrong Direction

**The pilots realized something was not right when they saw a mountain where there should have been water.**

BY MARK LACAGNINA

The following information provides an awareness of problems in the hope that they can be avoided in the future. The information is based on final reports by official investigative authorities on aircraft accidents and incidents.



## JETS

### Faulty IRU Leads Aircraft Astray

Boeing 737-300. No damage. No injuries.

Investigators were unable to determine why on-board navigation displays showed the 737 correctly tracking east toward Makassar, on the southwest coast of Sulawesi, Indonesia, when the aircraft actually was on a curving course to the south. The flight crew did not notice the error until they saw a mountain while descending over what should have been the Java Sea.

The Feb. 11, 2006, incident was caused by a malfunctioning inertial reference unit (IRU) and concluded with an uneventful landing at Tambolaka Airport on Sumba, an island about 255 nm (472 km) south of Makassar, according to the final report published recently by the Indonesian National Transportation Safety Committee.

The pilot-in-command (PIC) was an inspector for Indonesia's civil aviation authority and occasionally flew for the operator to maintain proficiency in the 737-300. While preparing for the scheduled flight to Makassar from Jakarta at 2300 coordinated universal time (0600 local time), he found that the no. 2 IRU, a major component of the 737's inertial reference system (IRS), had failed. "The failed IRU was replaced

by line maintenance engineers with a serviceable unit," the report said. "They tested and aligned the IRUs on the ground and found them to be functioning normally."

The PIC told investigators that he completed the alignment of the IRUs and initialized the IRS before departing from Jakarta at 2320. There were 146 passengers, six crewmembers and three flight attendant trainees aboard the aircraft.

The aircraft's flight management computer (FMC) normally receives data from the no. 1 IRU but automatically switches to the no. 2 IRU if a fault is detected. "The PIC reported that the takeoff, climb and heading changes on track were normal," the report said. "At 0025, the FMC changed, uncommanded, to [the no. 2] IRU, and the aircraft commenced a slow right turn. The PIC reported that he saw the caution 'IRS NAV ONLY' appear on the FMC, but the copilot cleared the message." The message indicated that the FMC was receiving only IRU data; the aircraft apparently was out of range of ground-based navigational aids.

Flight data recorder (FDR) data showed that the aircraft increasingly diverged south of the planned and programmed track. "The PIC reported that the divergence was not noticed because cockpit instruments showed [the aircraft] tracking toward Makassar," the report said. "This was confirmed by FDR data. ... The reason for the aircraft diverging to the right when the FMC showed that it was maintaining the flight-plan track could not be determined using the available data."

**“The pilots then referred to the standby compass and found that the aircraft’s heading was 230 degrees.”**

The course deviation was not noticed by air traffic controllers. The report said that the controllers had not received training on a recently installed air traffic control (ATC) radar system, had not correctly programmed the new radar system’s route-adherence-monitoring function, lacked “appropriate coordination [and] had a degraded awareness of their areas of responsibility.”

The 737’s transponder signal became weak as the aircraft flew south, and at 0041 the ATC radar track defaulted to the flight-plan track; thus, the 737 was depicted on the controllers’ displays as following the correct path to Makassar.

During this time, the PIC — the pilot flying — administered oral quizzes separately to two flight attendant trainees; the quizzes lasted 20 minutes and 15 minutes, respectively. The report said that the PIC was not authorized to conduct the checks and that they diverted his attention from flying the aircraft.

The report also noted that “while in the cockpit, [the second flight attendant trainee] noticed that the sun was from the left side of the PIC seat, about 10 o’clock to the nose of the aircraft” and that “the PIC subsequently covered the left cockpit window with paper.” The position of the sun indicated that the aircraft was heading south-southeast. “That should have been an indicator to the pilots that they had diverged significantly from the flight-planned track even though the navigation displays were indicating that they were tracking as planned to [Makassar];” the report said.

Believing they were 115 nm (213 km) from Makassar, as indicated by their electronic flight instruments, the crew received clearance from ATC to begin the descent from 33,000 ft. “When approaching 28,000 feet, the PIC saw a mountain on the right side of their track,” the report said. “That topography was not expected because the flight to Makassar does not pass a mountain. The pilots then opened a map to find their position. ... The pilots then referred to the standby compass and found that the aircraft’s heading was 230 degrees.”

The report said that the pilots consulted the quick reference handbook (QRH) but were unsuccessful in resolving the navigation problem

because they did not complete all the actions prescribed by the QRH.

The crew solicited help from ATC and from pilots of other aircraft to identify geographical features in the area but were unable to fix their position. At 0214, the PIC told the copilot that one hour of fuel remained and that they might have to prepare for a ditching. The copilot then said, “There is a runway down there.” The PIC decided to land at the unidentified airport.

“For the next 12 minutes while descending, the crew attempted to verify their position,” the report said. “The PIC told the senior flight attendant that they would shortly be landing somewhere on Sulawesi island.” After landing on the 1,920-m (6,300-ft) runway at 0240, the pilots found that they were on Sumba.

Investigators determined that both IRUs had malfunctioned during the flight. “The IRUs, when used by the flight management system, provided erroneous global position location to the FMC and flight instruments,” the report said.

The investigation found evidence of repeated, unresolved IRU malfunctions in the operator’s 737 fleet, including 18 in the two months preceding the incident. Nearly a year after the incident, the pilots of one of the operator’s 737-400s were distracted by an IRU malfunction when the autopilot disengaged while en route to Sulawesi in bad weather. They became spatially disoriented and were not able to recover from the subsequent upset; all 102 people aboard were killed (ASW, 6/08, p. 36).

### Service, Checklist Blamed for Gear Mishap

Embraer 170. Substantial damage. One serious injury.

After departing from Houston with 56 passengers and two flight attendants on May 30, 2006, the pilots were unable to raise the control lever to retract the landing gear. “The flight crew discussed the situation and did not believe they had a landing gear malfunction, as they did not receive an engine indicating and crew alerting system (EICAS) message [as shown on the checklist];” said the report by the U.S. National Transportation Safety Board (NTSB). “They decided to press the ‘Downlock Release’ button to raise the gear; the landing

gear subsequently retracted, and the flight continued to the destination airport.”

The nosegear did not extend when the crew prepared to land at Washington Dulles International Airport. The crew cycled the gear several times and performed checklist procedures, but the nosegear would not extend. “They continued in the traffic pattern while they briefed the flight attendants and passengers of the landing gear problem and instructed them to prepare for an emergency landing,” the report said. “The flight crew flew an extended traffic pattern for Runway 19L and touched down normally on the main landing gear. The captain held the nose up until the airplane lost elevator effectiveness, and then the nose slowly settled to the runway.”

After stopping on the runway, the crew initiated an emergency evacuation using the rear door slides. One passenger sustained a broken ankle while exiting the airplane.

Investigators found that routine nosegear service had been performed three days before the accident. The following day, a pilot reported that the nosegear was “low” and “sounded like it was bottoming out.” The nosegear strut was checked by maintenance personnel and found to be within limits. The day prior to the accident, a pilot reported that the landing gear did not retract after takeoff. “Maintenance personnel believed the problem to be the landing gear control lever and replaced it,” the report said.

Examination of the airplane after the accident revealed that the nosegear system contained only two-fifths of the normal hydraulic fluid quantity. Investigators found that, contrary to the airplane maintenance manual, the operator’s maintenance job card did not include a procedure to complete nosegear servicing by filling the shock strut with hydraulic fluid.

Investigators also found that the “Gear Lever Cannot Be Moved Up” checklist used by the flight crew differed from the manufacturer’s checklist and was not appropriate for the accident airplane. The checklist was appropriate for airplanes equipped with newer sensors that generate an EICAS message when the nosegear fails to retract or extend. The report said that

the accident airplane did not have the newer sensors, and the crew incorrectly believed that the absence of the EICAS message indicated that there was no landing gear problem.

### Camera-Battery Fire Forces Diversion

Airbus A320-200. Minor damage. No injuries.

The airplane was departing from New York’s Kennedy International Airport with 130 passengers and six crewmembers the afternoon of Feb. 10, 2007, when a flight attendant responded to a call by passengers who saw smoke emerging from an overhead bin. The flight attendant found that the smoke was coming from a camera-equipment bag. After spraying the bag with a fire extinguisher, she removed it from the overhead bin, placed it in the aisle and continued spraying the bag until the smoke stopped, the NTSB report said.

After being notified of the situation, the flight crew declared an emergency, returned to the departure airport and landed the A320 without further incident.

Examination of the camera bag revealed that a 9-volt lithium battery had failed catastrophically. “Other batteries located in the same pocket of the equipment bag as the 9-volt battery had unprotected contacts,” the report said. “[A] 14-volt [rechargeable lithium] battery pack displayed significant exterior thermal damage, consistent with damage from coming in contact with another battery.”

The report said that battery fires typically result from short circuits when a battery comes in contact with other metal objects (ASW, 3/08, p. 42). “Batteries are generally not designed to be able to contain catastrophic failures,” the report said. “When they go into thermal runaway, they often explode and expel their contents into the environment, potentially causing ignition in areas well beyond the initiating battery cell.”

### Guidance Lacking in Ground Accident

Boeing 747-200F. Substantial damage. No injuries.

A misunderstanding about the time at which the longest runway at Stockholm/Arlanda Airport would be closed for maintenance

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was among several factors that delayed the flight crew's preparations for the freighter's departure for a flight to Dubai the night of June 25, 2007, said the report by the Swedish Accident Investigation Board (SHK).

The flight crew started the engines as the 747 was pushed back from the cargo ramp. "After termination of the pushback, the parking brakes were set, and a [ground service] technician told the pilots that the pushback vehicle should be disconnected and removed," the report said.

The "After Start" checklist did not include a requirement for the flight crew to ensure that they received a thumbs-up "all-clear" signal from ground personnel before beginning to taxi. "About 45 seconds after the message from the technician that the pushback vehicle should be disconnected, the aircraft started to taxi without any clear signal," the report said. "The vehicle had been disconnected from the nosewheel and backed a bit so that the driver could change to the forward driving position. The vehicle was not backed far enough to get into the pilot's field of vision."

The technician and the driver of the pushback vehicle ran to safety before the 747's no. 2 engine struck the vehicle. The flight crew was making a right turn when the collision occurred. They heard a slight thud and felt a "juddering" that they attributed to the nosewheel skidding on the ground during the tight turn. About 30 seconds later, the no. 2 engine stopped producing power. The crew conducted the "Engine Failure" checklist and taxied the freighter back to the ramp.

"It was only while taxiing back in and parking the aircraft that the flight crew became aware that there had been an accident," the report said. The damaged engine leaked fuel, but there was no fire.

SHK determined that the accident was caused by "inadequate checklists for the pilots in respect of checking that an all-clear signal had been received" and that "stress and fatigue factors [likely] limited the concentration abilities of the pilots." The report noted that the pilots had been awake for 18 to 20 hours when the accident occurred at 0333 local time.

## Two Out of Three Not Good

Cessna Citation 560. Substantial damage. No injuries.

The Citation was en route with three passengers on a charter flight from Teterboro, New Jersey, U.S., to Akron, Ohio, the evening of Dec. 17, 2006, when the pilots saw annunciator lights indicating that hydraulic fluid quantity and flow were low. Normal landing gear extension procedures failed, and activation of the emergency system resulted in extension of only the left main gear and nosegear.

"The flight crew then attempted to extend the right main landing gear by yawing and turning the airplane, and performing several g-loading maneuvers," the NTSB report said. However, airport traffic controllers confirmed that the right main gear was still retracted. The hydraulic system failure also prevented operation of the airplane's flaps, spoilers and thrust reversers. The right wing and fuselage were damaged when the Citation was landed on the 7,601-ft (2,317-m) runway.

Examination of the airplane revealed that a hydraulic pressure hose had ruptured because of internal wear between the hose's fire sleeve and stainless steel braid. "The installation position of the hose was such that it contacted an adjacent structure and was not restrained along its intermediate length," the report said. "The hoses had been manufactured in 1990 and accumulated a total time in service of 8,356.9 hours and 8,077 cycles. There is no life limit in place relating to the hose. ... Following the accident, the airplane manufacturer was in the process of amending the airplane maintenance manual rigging procedures for the landing gear system and placing service time limits on hydraulic hoses."

## TURBOPROPS

### Double Jeopardy on Gravel Airstrip

Shorts SC-7 Skyvan. Destroyed. One fatality.

The 15,000-hour airline transport pilot had flown several aircraft, including a de Havilland Otter, to and from the airstrip at a remote lodge near McGrath, Alaska, U.S., but was performing his first landing there



in a Skyvan during a cargo flight from Fairbanks on Sept. 1, 2007, the NTSB report said.

The pilot escaped injury, but the airplane was substantially damaged when the nosegear collapsed while rolling out on the gravel strip, which was 1,000 ft (305 m) long and 40 ft (12 m) wide. “Temporary repairs were made to the airframe, and a new nosegear assembly was installed by company maintenance personnel,” the report said.

On Sept. 20, the pilot attempted to depart from the airstrip to ferry the Skyvan to the company’s maintenance facility in Anchorage. “The lodge owner reported that the pilot started both engines and taxied the length of the airstrip, stopping momentarily several times. The pilot ran the engines for about 20 minutes and then began a takeoff. The airplane appeared to accelerate ... but did not lift off until the very end of the airstrip.”

The lodge owner said that he did not hear any unusual engine noises. After becoming airborne, the airplane struck treetops, veered right and crashed in a shallow lake. “The entire cockpit area forward of the wings was torn off the airframe,” the report said. The pilot was unconscious when he was pulled from the wreckage and transported by helicopter to a hospital, where he died of his injuries five days later.

“Performance calculations indicated that the airplane’s takeoff distance would have been about 950 ft [290 m], although the lodge owner said that, in his experience, the accident airplane was capable of lifting off about halfway down the airstrip without difficulty,” the report said.

### Rainwater Causes Short Circuits

Beech Super King Air 350. Minor damage. No injuries.

The King Air was at Flight Level (FL) 330 (about 33,000 ft), en route from Galway, Ireland, to Paris with eight passengers on Dec. 9, 2007, when the flight crew detected the odor of burning electrical insulation. “A may-day was transmitted to ATC, and an emergency descent to FL 120 was performed,” said the

report by the U.K. Air Accidents Investigation Branch.

Although no smoke was visible in the cockpit, the crew conducted the “Smoke Removal” checklist. “Shortly thereafter, the acrid smell returned, accompanied by smoke, prompting the crew to divert to Cardiff [Wales] Airport, where an uneventful emergency landing was performed,” the report said. “Subsequent investigation revealed that the burning smell had been caused by electrical shorting due to moisture ingress into the right circuit breaker panel.”

Before departing from Galway, the King Air had been parked outside in the rain for two days. The report said that rainwater had entered the circuit breaker panel after seeping through the right-window seal.

### Company Collision on a Taxiway

Beech 99, Cessna 402B. Substantial damage. One minor injury.

The airplanes, operated by the same company, were en route on cargo flights to Milwaukee’s General Mitchell International Airport in nighttime visual meteorological conditions on Jan. 24, 2007. The pilot of the Cessna 402, a twin-piston airplane, initially was cleared to land on Runway 25L but then was told to side-step and land on Runway 25R due to traffic.

After landing, the Cessna 402 pilot had a relatively long taxi route to the cargo ramp on the southwest side of the airport; the airport ground controller did not include any “hold short” instructions in the taxi clearance. Meanwhile, the pilot of the Beech 99 was cleared to land on Runway 25L. “The pilot acknowledged the landing instructions and reported that, due to traffic arriving and departing on Runway 25L, he decided he would try to ‘land and exit quickly to expedite traffic flow,’” the NTSB report said.

The Cessna 402 pilot was in radio contact with the ground traffic controller when the Beech 99 pilot told the local traffic controller that he would exit Runway 25L on Taxiway A2, a high-speed stub taxiway at the intersection of Taxiway A, the taxiway that leads to the cargo ramp. “Neither controller had advised either

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pilot that another aircraft would be approaching the same taxiway intersection,” the report said.

The Cessna 402 pilot was taxiing west on Taxiway B, a parallel taxiway north of Taxiway A, when the Beech 99 landed. The 402 pilot then was turning onto Taxiway A at an oblique angle when the Beech 99 exited the runway on Taxiway A2. Neither pilot saw the other airplane. “The Beech 99 pilot stated that as he turned onto Taxiway A2, he turned off the strobes, landing light and deicing equipment, and then reached for the radio to tune the ground control frequency,” the report said.

Recorded airport surface detection equipment (ASDE-X) data showed that both airplanes were being taxied at 20 kt when they collided at 0200 local time. “The [airport] air traffic manager reported that the ASDE-X did not have conflict detection on taxiways [and] did not [provide an] alarm,” the report said.

“The Cessna 402 pilot stated that ... he was ‘hit by a company Beech 99 from behind’ [and] that the propeller on the Beech 99 ruptured the Cessna 402’s wing tip fuel tank, creating a fireball,” the report said. “The Beech 99 pilot stated that he ‘heard a thump, looked up to my right and saw the engine engulfed in flame.’”

Radar data showed that the airplanes traveled more than 100 ft (30 m) before stopping. Both pilots shut down their engines and exited the airplanes. The Beech 99 pilot received minor injuries.

## PISTON AIRPLANES

### EMS Airplane Stalls on Go-Around

Cessna 414. Destroyed. Two fatalities.

The airplane was on an emergency medical services (EMS) positioning flight from Morgantown, West Virginia, U.S., to pick up a patient in Teterboro, New Jersey, the afternoon of Dec. 26, 2006. The 414, which had anti-icing and deicing equipment, was cruising at 9,000 ft when the pilot told ATC “we’re getting iced up pretty bad here” and requested and received clearance to climb to 13,000 ft. Two minutes later, the pilot told ATC “I can’t

climb any farther” and requested clearance to descend to 7,000 ft.

The air route traffic controller cleared the pilot to descend to 5,000 ft and said, “If you want to level off on descent, that’s approved.” The pilot initially leveled off at 7,000 ft but then said “we’re just barely keeping up with it” and requested and received clearance to descend to 5,000 ft.

A few minutes later, the pilot told the controller “I may get to a point where I can’t hold my altitude” and that she would request clearance for an instrument approach “just to get me down to, like, twenty-five hundred feet to shed the ice off and go missed and then continue on my way.”

The controller replied, “Right now, you’re pretty much lined up for the localizer at Johnstown [Pennsylvania], so if you need to do that, just let me know.” About a minute later, the pilot requested vectors for the instrument landing system approach to Runway 33 at Johnstown. The controller said that the airport’s weather conditions included surface winds from 300 degrees at 15 kt, gusting to 20 kt, 7 mi (11 km) visibility and a 300-ft overcast with the ceiling varying from 200 to 600 ft. The pilot acknowledged the information and said, “If our ice comes off, we intend to go missed.”

As the 414 neared the airport, the controller told the pilot that the ceiling was at 500 ft and visibility was 4 mi (6 km). The airplane was established on the localizer when the controller terminated radar services and told the pilot to contact the airport traffic control tower.

When the tower controller asked the pilot if she planned to land or conduct a missed approach, the pilot said, “It depends if my ice comes off or not. If the ice does not come off, we’re going to land.”

The tower controller saw the 414 break out of the clouds to the right of course at about 300 ft and believed that the pilot was conducting a missed approach. The controller then saw the airplane make a rapid left turn toward



the runway and “drop like a rock.” The tower supervisor saw that the landing gear was not extended and told the pilot, “Check wheels down.” A few seconds later, the supervisor told the pilot to go around.

The landing gear was partially extended when the 414 touched down hard on the runway. “The pilot then attempted to abort the landing,” the NTSB report said. “The damaged airplane became airborne, climbed to the right, stalled and nosed straight down into the ground.” The pilot and flight nurse were killed.

### Fuel Tanks Unport on Takeoff

Piper Chieftain. Substantial damage. One serious injury.

The pilot planned to fly the airplane from Columbus, Georgia, U.S., to Eufala, Alabama, about 30 nm (56 km) away, to refuel on Feb. 20, 2007. Refueling records indicated that on takeoff, 22 gal (83 L) of usable fuel remained in the Chieftain’s inboard (main) tanks, which have a maximum capacity of 112 gal (424 L), the NTSB report said.

The airplane was about 800 ft above ground level (AGL) when both engines began to misfire. The engines then lost power as the pilot began a 180-degree turn back to the departure airport. The pilot realized that he could not reach the airport and attempted to land on a road. The Chieftain overshot the road and crashed into an embankment.

The report noted that the airplane operating manual says that when the inboard tanks are less than one-quarter full, turns on takeoff must be avoided to prevent fuel from moving away from the outlet ports. The manual states: “If the outlet is uncovered, the fuel flow will be interrupted and a temporary loss of power may result.”

## HELICOPTERS

### Training Involved ‘Dangerous Flying Activity’

Eurocopter EC135. Destroyed. One fatality, three serious injuries.

The helicopter was being used in police-training exercises in Sisjön, Sweden, on April 24, 2007. “The final part of the exercise consisted of so-called environmental

training in which the [trainees] were to be given experience in feeling the violent effects of tactical helicopter flying,” the SHK report said.

After performing several steep turns, the pilot flew at treetop level and began an abrupt climb. At about 300 ft AGL, the helicopter lost speed in a steep nose-up attitude before yawing left and beginning a steep dive. “At the conclusion of this maneuver, with high forward speed, the helicopter impacted the ground, the underside of the tail boom first and then the undercarriage skids,” the report said. “It then capsized and rolled several times before coming to rest in a water-filled ditch. During the rolling, the cabin disintegrated and the passengers were ejected, fastened in their seats. The pilot [who was killed] remained sitting in the wreck and partly underwater.”

SHK said that the accident was caused by the civil aviation authority permitting a “dangerous flying activity [and] the pilot’s performance of the flight in combination with the possibility that the snow skids [plate-like devices] mounted on the helicopter’s undercarriage may have affected the flight properties of the helicopter under extreme flying conditions.”

### Turbine Shaft Failure Forces Ditching

Bell 407. Substantial damage. One minor injury.

Soon after departing from a platform in the Gulf of Mexico on Aug. 16, 2007, the engine chip light illuminated. The pilot was turning back to the platform when he heard a high-pitched grinding noise and a pop before the engine lost power. “The pilot landed the helicopter safely on the water with the floats fully inflated,” the NTSB report said. “Shortly thereafter, a large wave broke out the right windshield and rolled the helicopter inverted.”

The pilot, who sustained minor injuries, and the passenger exited the helicopter and deployed a life raft. They were rescued by the crew of a shrimp boat. The power loss was traced to fatigue failure of the engine’s power turbine outer shaft. 🌀



Preliminary Reports				
Date	Location	Aircraft Type	Aircraft Damage	Injuries
Oct. 1, 2008	Kaliningrad, Russia	Boeing 737-300	substantial	144 none
The flight crew was unable to extend the landing gear and performed a gear-up landing at Kaliningrad-Khabrovo Airport.				
Oct. 2, 2008	Bangkok, Thailand	Boeing 747-400	none	1 serious, 13 minor, 151 none
En route from Hong Kong, the 747 was 128 nm (237 km) from Bangkok when it encountered severe turbulence at 40,000 ft. One passenger sustained a spinal injury.				
Oct. 5, 2008	Westerland, Germany	Cessna Citation 551	minor	2 none
During a positioning flight from Hamburg, the Citation was being landed at Westerland when the right main landing gear collapsed.				
Oct. 5, 2008	Nelspruit, South Africa	Britten-Norman Islander	destroyed	9 fatal
The Islander crashed near the summit of a mountain shortly after taking off for a visual flight rules (VFR) flight in marginal weather conditions.				
Oct. 6, 2008	Oaxaca, Mexico	Cessna 421	destroyed	2 fatal
The pilot was attempting to return to the airport after an apparent failure of the right engine on takeoff. The 421 was in a steep left turn when it crashed on the runway.				
Oct. 7, 2008	Indian Ocean	Airbus A330-300	minor	14 serious, 26 minor, 273 none
An inertial reference unit malfunction is suspected of having caused the A330's autoflight system to command an abrupt nose-down pitch change that resulted in a 650-ft dive from 37,000 ft while en route from Singapore to Perth, Australia.				
Oct. 8, 2008	Lukla, Nepal	de Havilland Canada DHC-6	destroyed	18 fatal, 1 serious
Visibility was reduced by fog when the Twin Otter struck a cliff short of the 1,600-ft (488-m) runway on approach to the airport, which is at 9,380 ft. The captain was the only survivor.				
Oct. 10, 2008	Longview, Washington, U.S.	Bell 206B	substantial	1 serious
The 206 was transporting an external load of tree limbs when the engine lost power. The helicopter rolled over during the forced landing in a ravine.				
Oct. 12, 2008	Bauru, Brazil	Beech King Air 100	destroyed	1 fatal
The King Air descended and struck terrain shortly after taking off for a cargo flight.				
Oct. 13, 2008	Sedona, Arizona, U.S.	Bell 407	none	1 fatal, 3 none
The search-and-rescue crew was picking up two hikers stranded on a mountain when the paramedic was struck by the main rotor blades while escorting a hiker to the helicopter.				
Oct. 14, 2008	Portland, Oregon, U.S.	Piper Chieftain	substantial	1 none
The pilot returned to the airport after the left engine caught fire during departure for a cargo flight. An exhaust-system clamp was found broken.				
Oct. 15, 2008	Aurora, Illinois, U.S.	Bell 222	destroyed	4 fatal
Night visual meteorological conditions prevailed when the emergency medical services (EMS) helicopter struck a lighted, 734-ft radio antenna, killing the three crewmembers and the patient.				
Oct. 17, 2008	San Pedro Garza García, Mexico	Cessna 402C	destroyed	3 fatal
The 402 crashed into a mountain at 5,700 ft after departing from Monterrey for a VFR flight to La Paz, Baja California Sur. Weather conditions included a 3,000-ft broken ceiling.				
Oct. 21, 2008	St. Martin, Netherlands Antilles	Robinson R44	destroyed	2 fatal
The EMS helicopter crashed at sea after departing from St. Martin to pick up a patient on Saba.				
Oct. 26, 2008	Kazan, Russia	MIL Mi-8	destroyed	4 fatal, 1 NA
The helicopter crashed between two houses during a test flight.				
Oct. 29, 2008	Jugiana, India	Beech King Air C90	destroyed	2 fatal
The King Air crashed shortly after departing from Chandigarh for a post-maintenance test flight.				
Oct. 31, 2008	Lanzarote, Canary Islands, Spain	Boeing 737	minor	80 none
The 737 overran the runway during a charter flight from Glasgow, Scotland.				
NA = not available				
This information, gathered from various government and media sources, is subject to change as the investigations of the accidents and incidents are completed.				