

# Garbage In, Garbage Out

**Data-entry error yielded an approach speed that was too low.**

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



## JETS

### Stick Shaker Activated

Boeing 717-200. No damage. No injuries.

The copilot was flying the aircraft with the autopilot and autothrottle engaged on a visual approach to Runway 29 at Kalgoorlie Airport in Western Australia the morning of Oct. 13, 2010. While turning onto final approach, he noticed that the pitch limit indicator on his primary flight display (PFD), which shows the difference between the aircraft's angle-of-attack and the angle-of-attack at which the stick shaker (stall warning) activates, was "bouncing down," said the report by the Australian Transport Safety Bureau (ATSB).

At the same time, the "red zipper," a PFD indication of the margin between current airspeed and the airspeed at which the stick shaker activates, was "bouncing up." The copilot and the captain believed that turbulence, rather than an impending stall, was causing these indications.

Airspeed was decreasing below 121 kt, the calculated approach speed, when the stick shaker activated. Although the prescribed initial response is to apply maximum thrust and roll the wings level, "the copilot responded by reducing the aircraft's pitch attitude while continuing

the turn," the report said. "The copilot reported that he had considered conducting an immediate go-around but continued the approach on advice from the PIC [pilot-in-command]."

The crew did initiate a go-around about a minute later, when they determined that the approach was not stabilized.

The crew had derived the 121-kt approach speed by adding the standard minimum of 5 kt to the reference landing speed ( $V_{REF}$ ) of 116 kt calculated by the aircraft's flight management system (FMS). For the second approach, the crew decided to add another 5 kt to the approach speed and limit the bank angle during turns to 20 degrees.

After establishing the 717 on final approach, the copilot noticed that the aircraft was below the desired flight path, and he increased the pitch attitude. The stick shaker activated again, and the crew conducted another go-around.

Control was transferred to the captain, who conducted the third approach at 130 kt, or 14 kt above  $V_{REF}$ , and landed the aircraft without further incident.

Investigators found that the stick shaker activations during the first two approaches were primarily the result of the approach speeds, which were too low for the conditions. Before departing from Perth with 97 passengers and three cabin crewmembers earlier that morning, the flight crew inadvertently had entered the aircraft's operating weight (i.e., operational empty weight), rather than its zero fuel weight, into the FMS.

“The approach speed [116 kt] generated by the FMS was based on a landing weight that was 9,415 kg [20,757 lb] less than the aircraft’s actual weight,” the report said. “The data-entry error also influenced the aircraft takeoff weight in the FMS. The error went unnoticed and did not manifest as an operational problem until the approach into Kalgoorlie.”

The flight was 18 minutes behind schedule when it departed from Perth, but the PIC told investigators that preflight preparations, including FMS programming, were normal and not rushed, the report said.

The crew had received information about passenger, baggage and cargo loading via the aircraft communications addressing and reporting system (ACARS) about three minutes before departure. The PIC read aloud the pertinent figures; the copilot entered them into a hand-held computer and then printed the load sheet. After checking the load sheet against the ACARS data, the PIC read aloud what he thought was the zero fuel weight shown on the load sheet, and the copilot entered it into the FMS. (The load sheet lists the zero fuel weight just below the operating weight.)

Before departure, the PIC checked the takeoff weight calculated by the FMS against the maximum weight appropriate for the conditions and was satisfied that it was lower; he did not notice the error.

Later, while nearing Kalgoorlie, the crew entered the runway and weather conditions into the FMS, which calculated the 116-kt  $V_{REF}$ , based on the erroneously low landing weight data. At the aircraft’s actual landing weight and configuration, the correct  $V_{REF}$  was 130 kt, and stall speed was 106 kt.

The crew’s use of the incorrect approach speed, 121 kt, rather than the correct approach speed, 135 kt, had reduced the margin to stick shaker activation from 29 kt to 15 kt. “The slower-than-required approach speed led to a higher angle-of-attack and an increase in drag that had an adverse effect on the aircraft’s performance and flight control responsiveness,” the report said. “As a result, the engine power

and pitch attitude required to maintain the desired flight profile were higher than usual, and significant pitch oscillations were evident. Those pitch oscillations contributed to the difficulty experienced by the flight crew in controlling the aircraft’s flight path and maintaining a stabilized approach.”

The report said that the format of the load sheet increased the risk of a data-entry error. Moreover, the operator’s procedures did not require flight crews to validate FMS-calculated landing weights.

“The operator has made a number of enhancements to the format of the 717 load sheet, the FMS weight data-entry and verification procedures, the weight-validation checks and the 717 simulator training in respect [to] recovery from stick shaker activation,” the report said.

### Another Data-Entry Error

Airbus A321-211. No damage. No injuries.

While departing from Manchester, England, the morning of April 29, 2011, for a flight to Crete with 223 passengers and eight crewmembers aboard, the commander noticed that the sidestick controller “felt heavy” on rotation. After the A321 lifted off the runway, he noticed an indication on his PFD that  $V_{LS}$ , the lowest selectable speed providing an appropriate margin to the stall speed, was increasing abnormally.

“He reduced the pitch attitude and covered the thrust levers in case more power was required,” said the report by the U.K. Air Accidents Investigation Branch (AAIB). “The aircraft accelerated and climbed, but at a slower-than-normal rate.”

En route to Crete, the flight crew checked their takeoff performance calculations and found that they were incorrect. The commander filed an incident report, and investigators found that the commander inadvertently had read aloud the zero fuel weight, 69,638 kg (153,526 lb), from the load sheet, rather than the actual takeoff weight, 86,527 kg (190,759 lb).

Both pilots entered the incorrect takeoff weight and other data in their laptop computers,

**The operator’s procedures did not require flight crews to validate FMS-calculated landing weights.**

**The crew did not thoroughly cross-check the takeoff performance calculations.**

which calculated  $V_1$  as 131 kt,  $V_R$  as 134 kt and  $V_2$  as 135 kt; the correct speeds were 155 kt for both  $V_1$  and  $V_R$ , and 156 kt for  $V_2$ . The data-entry error also resulted in a calculated power setting that was too low for the planned reduced-thrust, or flex, takeoff.

The report said that the crew did not thoroughly cross-check the takeoff performance calculations by the laptops against those by the FMS, which would have shown discrepancies in the takeoff weight and the “green dot speed,” the speed to be used if a takeoff is continued after an engine failure.

“There have been a significant number of reported incidents and several accidents resulting from errors in takeoff performance calculations around the world in recent years,” the report said (*ASW*, 2/12, p. 53). “Industry awareness of the frequency of these errors has been raised, but a solution has yet to be found.”

### Confusion Causes Low Departure

Boeing 737-8F. No damage. No injuries.

The flight crew were preparing for a scheduled cargo flight from London Stansted Airport to Ankara, Turkey, the afternoon of March 13, 2011, when they were assigned the Clacton 8R standard instrument departure (SID) from Runway 22.

While reviewing the published SID procedure, the pilots misunderstood two notes — “Initial climb straight ahead to 850 ft” and “Do not climb above SID levels until instructed by ATC [air traffic control]” — to mean that they were required to maintain 850 ft until they received further clearance to climb.

Altitudes in 100-ft increments, only, could be set in the 737’s mode control panel, so the copilot, the pilot flying, set 800 ft. On initial climb, the aircraft exceeded the selected altitude as the copilot engaged the autopilot. “The aircraft pitched nose-down and, after reaching a maximum altitude of approximately 1,050 ft, it descended to 800 ft,” or about 450 ft above ground level (AGL), the AAIB report said.

The airport traffic controller saw the aircraft descend in a steep nose-down attitude and

radioed the crew. There was no reply because the crew, without authorization, had changed to the London Control radio frequency. The departure controller saw on his radar display that the aircraft was at 800 ft and asked the crew for their current and assigned altitudes.

The pilot replied, “Say again please,” and the controller repeated the request. The pilot said, “Now eight thousand eight hundred feet.” The controller again asked for the current and assigned altitudes, and the pilot said, “Altitude eight hundred six sixty now.”

The 737 was still 450 ft above the ground when the copilot began a left turn to a heading of 88 degrees, as prescribed by the SID. During the turn, the autopilot disengaged and the aircraft’s ground-proximity warning system generated a “PULL UP” warning and a “DON’T SINK” warning.

The controller asked the crew to confirm that they were climbing to 4,000 ft, as prescribed by the SID, and the pilot replied, “Now climbing four thousand.”

“The aircraft entered a climb, having turned through approximately 100 degrees,” the report said. “The remainder of the departure proceeded without further incident.”

The report noted that the U.K. Civil Aviation Authority (CAA) has set 500 ft AGL as the minimum height at which a turn can be made during a SID, and that requirement is reflected in different ways by the published procedures. The captain had previously flown the Dover SID out of Stansted, which includes the note, “No turns below 850 ft” (airport elevation is 348 ft). Noting that this wording is common on many other SID charts, the report said that the different wording on the Clacton SID, “Initial climb straight ahead to 850 ft,” and similar wording on other SIDs can be misinterpreted by pilots, especially those for whom English is not the native language, to mean that they must level the aircraft at that altitude.

“The [737] pilot considered that this difference in phrasing was one of the factors that reinforced his misinterpretation of the information on the chart,” the report said.

As a result of the investigation, the AAIB recommended that the U.K. CAA ensure that “the vertical profile information [on] SIDs is unambiguous and that the wording used is consistent across all U.K. SIDs.”

### Conflicting Takeoff Clearances

Embraer 145EP. No damage. No injuries.

The controller-in-charge at Gulfport–Biloxi (Mississippi, U.S.) International Airport was working the local, ground control and clearance delivery positions the afternoon of June 19, 2011, when the flight crew of the Embraer radioed that they were ready for takeoff from Runway 18.

Sixteen seconds earlier, the controller had cleared the pilot of a Cessna 172 for takeoff from Runway 14. However, he did not ensure that the Cessna was clear of the departure area of Runway 18 before clearing the Embraer crew for takeoff, said the report by the U.S. National Transportation Safety Board (NTSB).

Another controller who had just entered the control tower to relieve the controller-in-charge at the local control position heard the takeoff clearances and said, “You’ve got two rolling.” The controller-in-charge did not acknowledge.

The Embraer, with 54 people aboard, was climbing through 300 ft when it passed in front of the Cessna. “No traffic [advisory] was issued to either aircraft by the [controller],” the report said. “Closest proximity was estimated to be 0 ft vertically and 300 ft laterally.”

The controller told investigators that, based on previous experience, he had expected that the regional jet would depart well ahead of the light airplane. He “did not comprehend that the Cessna could have departed so rapidly after being issued a takeoff clearance,” the report said.

### ‘Extremely Violent’ Iccap Turbulence

Boeing 777-200B. No damage. Two serious injuries.

The 777 was at Flight Level 330 (approximately 33,000 ft) during a flight from London to Los Angeles the afternoon of May 25, 2010, when it encountered unforecast iccap wave turbulence over southern Greenland.

“According to the captain ... the seat belt sign had been off for approximately 30 minutes prior to the turbulence encounter, which he described as ‘unexpected and extremely violent,’” the NTSB report said.

Investigators calculated that the airplane encountered a downdraft of about 13 ft/sec (4 m/sec) followed rapidly by an updraft of 24 ft/sec (7 m/sec). “The airspeed quickly increased into the overspeed range, and the first officer [the pilot flying] attempted to control the airspeed by retarding the throttles,” the report said. “The airspeed decayed rapidly, then increased immediately back into the overspeed range, with a maximum speed of about 0.874 Mach. He stated that the altitude deviations appeared to be plus or minus 80 to 100 ft and the autopilot remained engaged.”

During the turbulence encounter, a flight attendant suffered a fractured leg and a passenger suffered a fractured ankle. None of the other 195 passengers and 11 crewmembers, or the three flight crewmembers was hurt. The flight crew declared a medical emergency and diverted to Montreal, where the airplane was landed without further incident.

### ‘Gastric Event’ Disables Copilot

Fokker F28-1000. No damage. No injuries.

The aircraft was en route on a charter flight with 88 passengers from a mining site in West Angeleas, Western Australia, to Perth the night of July 7, 2011, when the copilot told the PIC that he had a “stabbing pain” in his lower abdomen. “The copilot left the cockpit momentarily to use the toilet, but the pain continued,” the ATSB report said. “On his return, he took paracetamol [an over-the-counter medication] for pain relief,” but the pain increased.

Shortly after advising the PIC that he was unable to continue his flight duties, the copilot became unconscious. “The PIC reported that the copilot did not respond to verbal or physical stimulus for about 10 seconds,” the report said.

He regained consciousness as the PIC was declaring an urgency and requesting medical assistance at Perth. A cabin crewmember

**‘The airspeed decayed rapidly, then increased immediately back into the overspeed range.’**

administered oxygen to the copilot and adjusted his seat and restraints. After the F28 landed, ambulance personnel administered medical treatment and then transported the copilot to a hospital, where he recovered about 2.5 hours later.

An aviation medical examiner determined that the copilot likely had suffered “an acute gastric event aggravated by dehydration and the food [he had] consumed” earlier that day, the report said.



## TURBOPROPS

### High, Hot and Committed

Beech King Air C90A. Substantial damage. No injuries.

The aircraft was on a business flight the afternoon of April 14, 2011, to Barbil, India. Because of high terrain south of the airport, Runway 18 is used for landings, and a go-around from short final approach is “almost impossible,” said the report by the Indian Directorate General of Civil Aviation.

The King Air crossed the approach threshold at about 300 ft AGL and touched down with about 1,400 ft (427 m) of the 3,500-ft (1,067-m) runway remaining. “Since the speed of the aircraft was high, it could not be stopped within the left-over length of runway,” the report said.

The nose landing gear separated, and the engines and propellers were substantially damaged when the aircraft overran the runway and struck a drainage ditch. The two pilots and their passenger were not injured.

### Gear Overlooked in Hectic Landing

Fairchild Metro III. Substantial damage. No injuries.

The pilot was conducting a cargo flight to Seattle’s Boeing Field, where the winds were from 210 degrees at 16 kt, gusting to 35 kt, the evening of March 10, 2010. He rejected two landings on Runway 13R because of the crosswind and wind shear causing airspeed fluctuations up to 30 kt.

During the third approach, the pilot was told by the airport traffic controller to follow a light jet on final approach to Runway 13R. “Upon reporting the traffic in sight, the pilot was given

his landing clearance and subsequently told to ‘turn base early’ due to another airplane on approach,” the NTSB report said.

When the light jet passed its assigned turn-off point on the runway, the controller told the Metro pilot to conduct S-turns for spacing. The Metro was on final approach at about 200 ft AGL, when the controller told the pilot “to go around and to maintain altitude,” the report said.

The pilot increased power, retracted the flaps to the approach setting and retracted the landing gear. “About 10 seconds later, the pilot was issued a landing clearance by the controller,” the report said.

The Metro touched down with the landing gear retracted, veered off the left side of the runway and came to a stop upright. The airplane was substantially damaged, but the pilot escaped injury.

### Aileron Separates on Training Flight

Beech King Air 90B. Minor damage. No injuries.

The King Air was on a downwind leg to land at Chickasha (Oklahoma, U.S.) Municipal Airport the morning of April 11, 2011, when one of the pilot-rated passengers seated in the cabin told the flight instructor that the right aileron had partially separated from the wing. The flight instructor assumed control from the student, who was training for a commercial license, and landed the airplane without further incident.

Examination of the aileron revealed that the two inboard hinges had come loose because the attachment bolts were not installed properly in the corresponding nut plates. “The aileron was not damaged, so a mechanic attached the aileron properly to the aileron hinge points, and the airplane was returned to service,” said the NTSB report.

The incident occurred 10 days and 5.3 flight hours after a phase inspection of the airplane that included removal of the right aileron to repair light surface corrosion. A maintenance technician did not properly reinstall the aileron after the work was completed, said the report, noting that a similar incident occurred on Feb. 15, 2011, when an aileron separated from an E90 during a postmaintenance functional check flight in Des Moines, Iowa (ASW, 2/12, p. 61).

The maintenance manual for the King Air 90 series says that during aileron installation, maintenance technicians should “carefully align the three hinges with the aileron and install the bolts in each hinge bracket and the aileron.” It also says, “Pull on the aileron straight away from the wing. If any movement is detected, carefully check the bolt installation.”

In 2003, the manufacturer notified operators that it had received reports of improperly installed ailerons. “Some operators have painted witness marks on the aileron hinge brackets to give technicians a visual cue that installation is incorrect,” the notice said.

### Prop Strikes Out-of-Place GPU

De Havilland Dash 8. Substantial damage. No injuries.

A marshaler and wing-walkers were guiding the airplane to the ramp at Phoenix (Arizona, U.S.) Sky Harbor International Airport the afternoon of April 20, 2009, when the captain lost sight of a ground power unit (GPU) off the right side of the airplane. He asked several times whether they were clear of the GPU, and the first officer replied that they were.

“However, the right engine’s propeller blades struck the GPU as the marshaler was crossing his arms [as a signal] to stop movement,” the NTSB report said. After being struck by the propeller blades, the GPU contacted the right wing and fuselage, causing structural damage.

Investigators found that the GPU had been parked about 7 ft (2 m) from its designated parking area.

## PISTON AIRPLANES

### Airspeed Inadequate for Icing

Beech 58 Baron. Substantial damage. Two fatalities.

A cold front extended along the route from Frederick, Maryland, U.S., to Olive Branch, Mississippi, the afternoon of April 27, 2010, and the pilot’s preflight weather briefing had included an advisory for moderate icing conditions from 5,000 ft to 16,000 ft.

The Baron, which was equipped and certified for flight in icing conditions, was at 12,000

ft when the pilot requested a lower altitude because the airplane was “losing airspeed.” ATC cleared him to descend to 7,000 ft. “The pilot acknowledged the clearance and requested a lower altitude because he was still losing airspeed,” the NTSB report said. He subsequently was cleared to descend to 5,000 ft.

“The pilot continued reporting airspeed problems during his descent,” the report said. “The last communication from the pilot was: ‘Just went down like an absolute rock. Don’t know what happened.’”

ATC then lost radio and radar contact with the Baron. The airplane was in a 30-degree nose-down attitude when it subsequently struck a heavily wooded hillside near Bear Branch, Kentucky. “A post-accident examination of the wreckage revealed no preimpact anomalies with the engines, airframe or systems that would have precluded normal operation,” the report said. “It is probable that the airplane may have accumulated ice on its surfaces and the pilot was unable to maintain an adequate airspeed during the descent.”

### Brakes Fail Due to Air in Lines

Britten-Norman Islander. Substantial damage. No injuries.

After touching down on the runway at Montserrat, United Kingdom, the evening of April 17, 2011, the pilot felt no resistance when he depressed the right brake pedal. “While maintaining directional control with the rudder pedals, the pilot tried to ‘pump’ the brake pedals, but this had no effect on the right brakes,” the AAIB report said.

The 540-m (1,772-ft) runway ends in a near-vertical, 200-ft drop. “To avoid departing the end of the runway, the pilot applied left brake and allowed the aircraft to veer left onto the grass,” the report said. The nose landing gear, left wing tip and left propeller were damaged when the Islander struck an embankment, but the seven passengers and the pilot escaped injury.

“The loss of right braking was attributed to trapped air in the hydraulic lines, which was probably introduced during a right brake O-ring seal replacement prior to the accident flight,”



the report said. “Following this repair work, the right brakes had not been bled in accordance with the aircraft maintenance manual.”

### Distracted by Paperwork

Beech B80 Queen Air. Substantial damage. No injuries.

While holding on a taxiway for departure from Minneapolis–St. Paul (Minnesota, U.S.) International Airport the morning of Feb. 24, 2010, the pilot set the parking brake and attended to some paperwork for the cargo flight. He later told investigators that the parking brake “obviously was not set hard enough,” the NTSB report said.

The Queen Air rolled forward and struck another airplane operated by the same cargo company. The collision caused minor damage to the Queen Air’s propeller and substantial damage to the other airplane’s empennage. Inspection of the Queen Air’s parking brake system revealed no anomalies.

## HELICOPTERS

### Bearing Failure Causes Power Loss

Bell 407. Substantial damage. Two serious injuries.

The 407 was transporting six skiers to a drop site at 6,000 ft near Blue River, British Columbia, Canada, the morning of Dec. 15, 2010. While climbing at 65 kt about 200 ft above rising terrain near the drop site, the pilot heard a bang and felt the helicopter shudder when an engine compressor stall occurred. The low-rotor-speed and engine-out horns then sounded.

“Moments later, the helicopter landed heavily, and the pilot and the ski guide, respectively seated in the right and left front seats, sustained back injuries,” said the report by the Transportation Safety Board of Canada. The other five skiers were not injured.

Investigators determined that the compressor stall and the power loss were caused by the failure of the no. 2 bearing, which supports the aft end of the compressor rotor. “The bearing failure was unusual, in that it was very rapid and was not preceded by a chip detection warning,” the report said.

### Tail Rotor Sheds Balance Weights

Bell 206L-4. Substantial damage. No injuries.

The LongRanger was in cruise flight the afternoon of March 3, 2011, when the pilot felt a high-frequency vibration in the airframe and flight controls. He declared an urgency and landed the helicopter next to a runway at London City Airport. The tail rotor gearbox mountings and the tail boom were damaged, but the pilot and his passenger were not injured.

“Examination revealed that a bolt securing balance weight assemblies to a tail rotor blade had failed due to the formation of a crack in the bolt shank which propagated in fatigue,” the AAIB report said. “The helicopter manufacturer confirmed that this was the first reported occurrence of this nature relating to this design of tail rotor system.”

### Unlatched Cowling Strikes Main Rotor

Eurocopter MBB-BK 117C-2. Substantial damage. No injuries.

The pilot conducted a preflight inspection of the emergency medical services helicopter at the beginning of his shift on Jan. 1, 2011, and later assisted a maintenance technician in verifying fuel control settings. “Both of these [tasks] required that the engine cowling doors be opened,” the NTSB report said.

The pilot told investigators that he checked the security of the doors and cowlings, and the overall condition of the aircraft while preparing to depart that night for a positioning flight from Rochester to Albert Lea, both in Minnesota, U.S. After the pilot started the no. 1 engine, however, a flight medic told him that she heard an “unusual rattle.”

“The pilot asked her to check the security of the cowling door latches,” the report said. “When the flight medic returned, she informed him that the latches appeared to be secure.”

Nearing the destination, the pilot heard a loud bang and felt a vibration. “He elected to continue the approach to the destination helipad and subsequently landed without further incident,” the report said. “A post-accident examination revealed substantial damage to all four main rotor blades [and that] the lower portion of the left engine cowling had separated.”



## Preliminary Reports, February 2012

Date	Location	Aircraft Type	Loss Type	Injuries
Feb. 2	Anchorage, Alaska, U.S.	Beech 99	major	7 none
Day visual meteorological conditions (VMC) prevailed when the airplane struck terrain short of the runway while landing at Merrill Field.				
Feb. 2	Pueblo, Colorado, U.S.	Learjet 35	minor	10 minor/none
Night instrument meteorological conditions (IMC) prevailed, and winds were from 160 degrees at 15 kt when the Learjet veered off the right side of Runway 08L before reaching V <sub>1</sub> on takeoff.				
Feb. 2	Elmira, New York, U.S.	Beech 99	minor	1 minor/none
The airplane came to a stop on its belly cargo pod after the landing gear retracted during the landing roll.				
Feb. 3	Pristina, Serbia	Eurocopter SA 330	major	11 none
The pilot landed the Super Puma in a field after it lost power on takeoff.				
Feb. 3	Boise, Idaho, U.S.	Lancair Propjet	total	1 fatal
The pilot had reported a "problem" after rejecting the first takeoff. On the second attempt, the experimental single-turboprop climbed about 200 ft, entered a steep left bank and rolled once while descending to the ground.				
Feb. 4	Bilai, Papua, Indonesia	Pacific Aerospace 750XL	major	2 minor/none
The airplane had a cargo of diesel fuel when it veered off the runway and struck a ditch after the left main landing gear collapsed on landing.				
Feb. 5	Miyagi, Japan	Airbus A320	major	166 minor/none
Day VMC prevailed when the A320's tail struck the runway during a late go-around at Sendai Airport.				
Feb. 10	Madison, Wisconsin, U.S.	Daher-Socata TBM 700	major	3 minor/none
Day VMC prevailed when the airplane pitched up shortly after lift-off and then entered a steep nose-down descent to the ground.				
Feb. 11	Wheatland, Wyoming, U.S.	Bombardier Learjet 31	major	4 none
The main landing gear collapsed while the Learjet was landing during an emergency medical services (EMS) flight.				
Feb. 12	Bukavu, Democratic Republic of the Congo	Gulfstream G-IV	total	3 fatal, 3 serious, 3 minor/none
Day VMC prevailed when the G-IV touched down halfway down the 2,000-m (6,562-ft) runway, overran the runway and traveled down a steep embankment. Two people on the ground also were killed.				
Feb. 13	Brooksville, Florida, U.S.	Learjet 55	minor	3 minor/none
Night VMC prevailed when the Learjet veered off the runway on takeoff, collapsing the nose landing gear.				
Feb. 13	Craiova, Romania	Saab 2000	major	1 minor, 51 none
Day IMC prevailed when the airplane veered off the runway on takeoff and came to a stop in deep snow.				
Feb. 14	Brisbane, Queensland, Australia	Fairchild Metro	major	2 minor/none
The flight crew was unable to extend the landing gear during a night post-maintenance functional check flight and landed the Metro with the gear retracted.				
Feb. 15	Jackson, Wyoming, U.S.	Bell 407	total	1 fatal, 2 serious
Witnesses said that the pilot appeared to experience control difficulties as the EMS helicopter departed from a snowmobile accident site. They lost sight of the 407 before it struck trees and terrain.				
Feb. 17	Thandwe, Myanmar	ATR 72	major	34 none
The flight crew was unable to extend the nose landing gear and landed with it retracted.				
Feb. 18	Tanai, Russia	Let L-410 Turbolet	major	2 minor/none
The right main landing gear collapsed on touchdown after the Turbolet struck a truck on final approach. The truck then struck a minibus, seriously injuring a passenger.				
Feb. 19	Hokkaido, Japan	Eurocopter EC 120	major	1 minor/none
The helicopter turned over while landing on Mount Karifuri.				
Feb. 21	El Refugio, Mexico	Rockwell Turbo Commander	total	3 fatal
The airplane crashed under unknown circumstances during a night law-enforcement flight.				
Feb. 27	Newark, New Jersey, U.S.	Embraer 170	major	73 minor/none
The flight crew was unable to extend the nose landing gear and landed the airplane with it retracted.				
Feb. 28	Manaus, Brazil	Cessna 208 Caravan	total	1 fatal
A witness said that the "propeller stopped" shortly before the Caravan struck a power pole and crashed during takeoff.				
Feb. 28	Rio Dulce, Guatemala	Bell 206	major	3 minor/none
The pilot made a forced landing after the helicopter struck power lines during a flight in day IMC.				

This information is subject to change as the investigations of the accidents and incidents are completed.

Source: Ascend