

An Automation Anomaly

Software did not block erroneous acceleration data.

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 on aircraft accidents and incidents by official investigative authorities.

JETS

Crew Had No Guidance for Response

Boeing 777-200. No damage. No injuries.

The aircraft was climbing through Flight Level (FL) 380, about 38,000 ft, after departing from Perth, Western Australia, for a scheduled flight to Kuala Lumpur, Malaysia, the evening of Aug. 1, 2005, when the flight crew observed a “LOW AIRSPEED” advisory on the engine indicating and crew alerting system (EICAS). At the same time, the primary flight display (PFD) showed a full-right slip/skid indication, said the Australian Transport Safety Bureau (ATSB) report.

The PFD initially indicated that airspeed was nearing stall speed; it then indicated that airspeed was nearing the overspeed limit. “The aircraft pitched up and climbed to approximately FL 410, and the indicated airspeed decreased from 270 kt to 158 kt,” the report said. “The stall warning and stick shaker devices also activated.”

The pilot-in-command (PIC) disengaged the autopilot and lowered the nose. “The aircraft autothrottle then commanded an increase in thrust, which the PIC countered by manually

moving the thrust levers to the idle position,” the report said. Nevertheless, the aircraft pitched nose-up again and climbed 2,000 ft.

“The flight crew notified air traffic control (ATC) that they could not maintain altitude and requested a descent and radar assistance for a return to Perth,” the report said. “The crew were able to verify the actual aircraft groundspeed and altitude with ATC.”

PFD indications appeared normal during the descent. The PIC engaged the left autopilot but then disengaged it when the aircraft pitched nose-down and banked right. “A similar result occurred when the right autopilot was selected, so the PIC left the autopilot disengaged and manually flew the aircraft,” the report said.

The PIC was unable to disengage the autothrottle system with the disconnect switches on the thrust levers or the disconnect switch on the mode control panel (MCP). “The reason it remained active was because the flight crew did not deselect the autothrottle arm switches [on the MCP] from the ‘ARMED’ position to the ‘OFF’ position,” the report said.

The aircraft was 3,000 ft above ground level when the PFD again indicated an erroneous low-air-speed condition and the autothrottle system responded with a thrust increase. The PIC apparently countered this again by moving the thrust levers to the idle position. The flight crew landed the aircraft without further incident.

“The crew were faced with an unexpected situation that had not been foreseen.”

Investigators found that the flight data recorder (FDR) had recorded unusual vertical, lateral and longitudinal accelerations when the upset occurred. “The acceleration values were provided by the aircraft’s ADIRU [air data inertial reference unit] to the aircraft’s primary flight computer, autopilot and other aircraft systems during manual and automatic flight,” the report said.

The investigation determined that the conditions leading to the incident began in June 2001, when one of several accelerometers failed and began providing erroneous high-acceleration data to the ADIRU. The ADIRU software then excluded data from the failed accelerometer in acceleration computations. However, another accelerometer failed just before the upset occurred, and a software anomaly allowed the ADIRU to use erroneous data from the accelerometer that had failed four years earlier. The result, said the report, was that erroneous acceleration data were provided by the ADIRU to the flight control systems.

There was no checklist in the quick reference handbook (QRH) addressing the unreliable airspeed indications that the flight crew had received before the upset occurred. “When the hardware [i.e., accelerometer] failure occurred, combined with the software anomaly, the crew were faced with an unexpected situation that had not been foreseen,” the report said.

Among actions taken in response to the incident investigation were an emergency airworthiness directive issued by the U.S. Federal Aviation Administration (FAA) requiring installation of new ADIRU software and a revision of the 777 QRH by Boeing to include an “Airspeed Unreliable” checklist.

Sidestick Activations Lead to Tail Strike

Airbus A321. Substantial damage. No injuries.

The first officer, the pilot flying, said that the aircraft seemed to lose inertia as it crossed the runway threshold at 50 ft while landing at Fort Lauderdale/Hollywood (Florida, U.S.) International Airport on Sept. 18, 2005. “The first officer stated that before touchdown,

he lowered the nose a little bit, and the aircraft touched down firmly,” said the U.S. National Transportation Safety Board (NTSB) report. The captain told investigators that he believed the flare was initiated too late and was incomplete.

The aircraft bounced on touchdown, and the first officer lowered the nose to prevent a tail strike. “The captain remembered that, as the nose of the aircraft was lowering prior to the second touchdown, he may have pulled back on his sidestick controller slightly to prevent the nose gear from striking the runway at too great a speed,” the report said.

The tail struck the runway during the second touchdown. None of the 197 occupants was injured.

FDR data indicated that both sidestick controllers were being activated simultaneously when the tail strike occurred. “According to the manufacturer, when both sidestick controllers are activated simultaneously ... in the same or opposite directions and neither pilot takes priority via the takeover push button, the system adds the signals of both pilots algebraically,” the report said. “Airbus had issued flight crew operating bulletins concerning bounced landings and tail strikes, but the pilots stated that no classroom or simulator training was received to reinforce the meaning and contents of the bulletins.”

‘Heavy’ Controls Traced to Misrouted Cable

Boeing 737-700. Minor damage. No injuries.

After completing a scheduled flight from Melbourne, Victoria, to Sydney, New South Wales, Australia, the night of Aug. 9, 2005, the pilot reported “heavy” flight controls. “An inspection by maintenance engineers revealed that the left lower rear elevator cable was incorrectly routed around a stiffener and that the stiffener and cable section had been damaged as a result of contact between them,” said the ATSB report.

About two weeks before the incident, a contract maintenance organization had replaced eight elevator control cable sections while performing a scheduled maintenance check of the

aircraft. The cable replacements were required by Boeing Service Bulletin 737-27-1254 Revision 1.

The contract maintenance organization's forward planning department was not assigned to provide full work details from the service bulletin, and work task cards from a previous job were copied and used instead. "The task cards contained insufficient instructions for the required work to be satisfactorily completed," the report said.

While preparing a rear cable for replacement, a trainee failed to secure it before removing the cable keeper. When the keeper was removed, the unsecured cable slipped out of sight. "While recovering the cable, the trainee and an aircraft maintenance engineer inadvertently misrouted the cable around the stiffener," the report said. "When the replacement cable was pulled into place, it followed the same incorrect route around the stiffener." The two workers did not inform their team leader or make a record of the temporary loss of the old cable; they also did not verify that the new cable was routed correctly.

While performing duplicate inspections of the cable replacements, two maintenance engineers heard a rubbing noise but thought that it came from a cable pressure seal. They also noticed a heaviness in elevator control movement. However, they failed to conduct thorough investigations of the two anomalies.

The report indicated that time pressures might have contributed to the workers' failure to inform their team leader of the temporary cable loss and their less stringent duplicate inspections of the cable work. The duplicate inspections were recorded on a form that was not current. The form, which had been replaced in 2003, "did not reflect the correct scope of duplicate inspections required," the report said.

"The investigation has highlighted the necessity of using forward planning processes for critical work tasks and the necessity to report and record all nonroutine work events," the report said. "Had the loss of control cable run integrity been recognized as a critical event and

a record been made of the event, then more rigorous inspections may have detected the misrouted cable."

— *Bart Crotty*

Learjet Overruns Snow-Covered Runway

Learjet 35A. Substantial damage. No injuries.

The airplane was on a positioning flight from Salt Lake City, Utah, U.S., to Kansas City, Missouri, to pick up passengers for a charter flight the night of Jan. 28, 2005. Nearing the destination, Kansas City International Airport, the flight crew learned that the airport was closed because an airliner had slid off a contaminated taxiway and a one-hour hold could be expected before approach clearance.

The crew had specified Lincoln (Nebraska) Airport, which has a 12,901- by 200-ft (3,932- by 61-m) runway, as the alternate airport on their flight plan; however, they requested and received clearance to divert to the nearby Charles B. Wheeler Downtown Airport, which has a 7,000- by 150-ft (2,134- by 46-m) runway. Reported visibility at the airport was 1.25 mi (2,000 m) in light snow and mist. The runway had just been plowed full length and 50 ft (15 m) on both sides of the centerline, but 1/4 in (6 mm) of snow remained on the plowed area.

The tower controller told the Learjet crew that braking action had been reported as fair; the controller did not say that the report had been made by the pilot of a Cessna 210, a light single-engine airplane. "The Cessna 210 pilot did not use brakes during landing and did not indicate this to [the tower controller] during his braking-action report," the NTSB report said.

The crew conducted the instrument landing system (ILS) approach to Runway 19. The copilot said that the airplane touched down about 1,000 ft (305 m) from the threshold and that deceleration appeared normal until the airplane was about 1,500–2,000 ft (457–610 m) from the departure end of the runway, where speed "stabilized" at 20–30 kt. The wheel brakes were ineffective in stopping the airplane.

The Learjet overran the runway and the gravel runway safety area, struck the ILS localizer

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antenna array, struck and dragged a section of chain link perimeter fence, crossed a road, penetrated a steel guard rail and came to rest on the slope of a flood levee.

NTSB said that the probable cause of the accident was “the contaminated runway conditions during landing” and that contributing factors were insufficient runway-condition information, the crew’s operation of the airplane with inoperative thrust reversers (per provisions of the minimum equipment list) and their decision not to divert to their planned alternate airport.



TURBOPROPS

Smoke Traced to Altimeter Short Circuit

Fokker 50. Minor damage. No injuries.

About 15 minutes after departing from Stockholm, Sweden, for a scheduled flight to Wasa, Finland, the morning of June 1, 2006, a red warning flag appeared on the commander’s electromechanical altimeter and information displayed on the altitude selector disappeared. The flight crew saw smoke emerge from the center console and detected the odor of an electrical fire, said the Swedish Accident Investigation Board report.

The commander declared an emergency and turned back to Stockholm. The pilots donned their oxygen masks, and the commander transferred control to the copilot before conducting checklist operations.

Radio communication with ATC was lost for five minutes because the audio connection to the commander’s oxygen mask had not been selected. “Since the technical failure in the aircraft’s altimeter system also resulted in the loss of the transponder’s height-reporting information, the period of lost communication with the aircraft was a further cause of concern to air traffic control,” the report said.

The smoke ceased during the return flight, and the crew took off their oxygen masks and donned their headsets, which restored radio communication with ATC. The approach and landing were conducted without further incident. None of the 20 occupants was injured.

Investigators found that an electrical wire in the altimeter, which was manufactured in 1988, had become trapped between a capacitor and the metal base plate. Damage to the wire resulted in a short circuit that caused the capacitor to overheat.

Close Encounter With Fitful Head

Dornier 328-100. No damage. No injuries.

The aircraft, operated by an Icelandic company, was on a charter flight with 17 passengers and three crewmembers from Aberdeen, Scotland, to Sumburgh Airport, on the southeast coast of the Shetland Islands, on June 11, 2006. The airport was reporting winds from 150 degrees at 9 kt, 7,000 m (4 mi) visibility and a few clouds at 600 ft, said the U.K. Air Accidents Investigation Branch (AAIB) report. Runway 09 was in use.

“The commander was familiar with Sumburgh Airport, although he had last operated there with a different company seven or eight years previously,” the report said. “The copilot had only been to Sumburgh once, about six months previously.”

The commander told investigators that he intended to show the copilot local terrain features during a visual approach. He told the copilot that he would fly to a navigation waypoint 5 nm (9 km) west of the airport, then toward Fitful Head, an area of high terrain on the southwest coast of the island, before turning to a right base to Runway 15. He also briefed the localizer/DME (distance-measuring equipment) approach to Runway 09, in case they could not conduct a visual approach.

The aircraft was nearing the waypoint when the approach controller approved the crew’s request for a visual approach to Runway 15. “The copilot reported that he could not see the airport, as it was obscured by cloud, but could see high ground ahead and to the right,” the report said. “He asked the commander if he intended to turn to the right before the high ground, and the commander said he would.”

The report said that as the aircraft descended toward Fitful Head, “neither the commander

nor copilot were visual with the coastline or the headland itself, though both were in visual contact with the surface of the sea.” Visibility decreased, and the commander was beginning a right turn when the terrain awareness and warning system (TAWS) generated a “CAUTION TERRAIN” warning and a “TERRAIN, TERRAIN, PULL UP” warning. The commander did not level the wings and initiate a maximum-performance climb, as required by the airplane flight manual.

“The copilot described looking up and seeing a cliff or steep hill ahead of the aircraft as the commander increased the bank angle to the right,” the report said. The landing gear warning horn then sounded, indicating that the aircraft was below 500 ft radio altitude.

The “TERRAIN, TERRAIN, PULL UP” warning and the landing gear warning horn continued as the aircraft was flown parallel to and 0.6 nm (1.1 km) from the cliffs and 400 to 600 ft below their tops. “The copilot was alarmed by the situation and considered taking control from the commander,” the report said. “However, he thought that to attempt to do so while the aircraft was maneuvering at low level might place the aircraft in a more hazardous situation.”

The coastline receded as the aircraft continued eastward, toward the airport, and the TAWS warnings ceased. The approach and landing were conducted without further incident.

Freezing Rain Forces Freighter to Descend

Cessna 208B Caravan. No damage. No injuries.

Meteorological conditions were conducive to freezing rain throughout the cargo flight’s route along the western coast of Norway, from Bergen south to Stavanger, the morning of Jan. 19, 2006, said the report by the Accident Investigation Board of Norway.

Icing conditions were encountered during the climb to FL 110. The commander, flying the aircraft on autopilot, maintained airspeed above 105 kt, the recommended minimum airspeed in icing conditions at the time.

About 30 minutes after departure, the icing conditions became considerably worse, the

report said. The flight crew saw ice accumulating behind the deice boots. “Flight speed was decreasing, and as they entered mountain waves and lost altitude, it became impossible to return to FL 110,” the report said.

The commander disengaged the autopilot and turned back to Bergen. He applied full power and maintained 105 kt, which resulted in a descent of about 700 fpm. At FL 090, the commander was able to maintain altitude. “Full engine power was still required to maintain 105–110 kt,” the report said. “According to the crew, normal cruising speed at cruise power is 135–145 kt.”

Ice began to break off the aircraft during the approach to Bergen, and the crew conducted a landing without further incident.

The report noted that two months after this serious incident, the FAA, responding to Caravan accident investigations in Canada and the United States, issued Airworthiness Directive 2006-06-06, which requires, in part, disengagement of the autopilot at the first indication of ice accumulation and an increase in the minimum airspeed in icing conditions with flaps retracted to 120 kt. The directive also prohibits continued flight in moderate or severe icing conditions.

PISTON AIRPLANES

Directional Control Lost in Thunderstorm

Cessna 402B. Substantial damage. No injuries.

Visibility was 1/2 mi (800 m) in heavy thunderstorms and rain when the airplane arrived at Fort Lauderdale (Florida, U.S.) Executive Airport during a positioning flight from South Bimini, Bahamas, on July 23, 2006. Winds were reported as variable at 6 kt, gusting to 25 kt, when the pilot landed the airplane on Runway 31.

During the landing roll, the airplane veered off the runway and struck a runway sign. The nose landing gear collapsed, and the propellers struck the ground.

NTSB said that the probable causes of the accident were “the pilot’s continued flight into adverse weather and his failure to maintain directional control during the landing roll.”



Unsecured Door Forced Into Compartment

Britten-Norman Trislander. Minor damage.

No injuries.

During takeoff from Saint Brieu, France, for a scheduled flight with three passengers to Guernsey, Channel Islands, the morning of June 7, 2006, the pilot heard a loud bang. “The commander could not identify the cause but, after establishing that all three engines were operating normally and that the aircraft was under control, he returned to Saint Brieu,” the AAIB report said.

After landing the aircraft and disembarking the passengers, the pilot found that the forward baggage door had been forced into the baggage compartment. “During the short flight, aerodynamic forces shut the door with sufficient violence to push it into the fuselage aperture,” the report said.

An inspector for the French Direction Générale de l’Aviation Civile found that the door-locking mechanism functioned normally. An engineer for the operator concluded that the door had not been secured before takeoff.

The report said that to avoid tipping the aircraft onto its tail, the operator’s loading procedure was to place a trestle under the tail and embark the passengers before loading baggage. “The operator considered that it was not good practice to leave the cockpit unattended with passengers aboard,” the report said. “Consequently, a commander could not leave the aircraft interior to check the baggage door when loading was complete.”

There are no baggage-door-warning lights in Trislanders. “Responsibility for checking the security of the baggage door was delegated to a ground handler, whose duty it was to report to a commander that all the doors were secure prior to the engines being started,” the report said.

Multiple Failures Spoil Training Flight

Beech 76 Duchess. Destroyed. Three minor injuries.

A flight instructor was providing airplane-familiarization training for a commercial pilot in Glendale, Arizona, U.S., on June

22, 2005. There also was one passenger aboard the airplane. After shutting down the left engine and feathering the propeller to demonstrate one-engine-inoperative (OEI) procedures, the instructor was unable to restart the engine, the NTSB report said.

After several unsuccessful attempts to restart the engine, both pilots detected the odor of burning insulation and saw a trace of smoke emerge from behind the instrument panel. Electrical power then was lost to all instruments and radios except one navigation/communication radio and the fuel gauges.

The instructor turned back to the airport and requested and received clearance to conduct a straight-in approach to Runway 01. “The [instructor] attempted to extend the landing gear but did not get a down-and-locked indication for the nose gear,” the report said. “He queried the tower controller as to whether or not the landing gear was down, and the controller informed him it was not down and [told the instructor] to abort the landing.”

The instructor conducted an OEI go-around and circled to land on Runway 19. “Although the [instructor] was able to extend the landing gear, he was unable to maintain altitude,” the report said. “He declared an emergency just before impacting an open dirt field 1/4 mi [0.4 km] north of the runway.” The occupants exited the airplane before it was consumed by a post-impact fire.

The report said that examination of the wreckage revealed no pre-existing mechanical malfunctions or failures.

HELICOPTERS

Disorientation Leads to Water Contact

MBB BO-105. Destroyed. Two fatalities.

The Canadian Coast Guard helicopter, operated by the Transport Canada Aircraft Services Directorate, had transported personnel and supplies to a lighthouse off the southern tip of Burin Peninsula in Newfoundland and Labrador, and was returning to Marys-town with the pilot and a passenger aboard to



pick up a technician late in the afternoon of Dec. 7, 2005.

The forecast for the area included 2,500-ft ceilings and 2–6 mi (3–10 km) visibility in light snow showers and scattered areas of stratocumulus clouds with bases at 400 ft, 1/2-mi (800-m) visibility in snow and gusts to 30 kt, said the report by the Transport Safety Board of Canada.

“When last observed, the helicopter was about 1 nm [2 km] east of Marystown, flying slowly at low altitude, in heavy snow and in near-dark conditions,” the report said. At 1800 local time — one hour after the expected time of arrival — the helicopter was reported overdue to search and rescue authorities. The bodies of the pilot and passenger were found in Mortier Bay, east of Marystown, later that night.

Attempts to locate the helicopter by detecting signals from its underwater locator beacon (ULB) were unsuccessful. The report said that the ULB likely malfunctioned. The helicopter was located in about 100 ft of water by side-scanning sonar 10 days after the accident. “All major components were accounted for and were near the main fuselage,” the report said. “The close distribution of wreckage items on the sea bottom was consistent with a helicopter that was intact when it struck the water. ... Examination of the helicopter did not reveal any pre-existing mechanical abnormalities that could have contributed to the occurrence.”

The examination indicated that the helicopter was in tail-low forward flight, with the engines producing high power, when it struck the water. The report said that the pilot likely had become disoriented in conditions including reduced visibility in heavy snow and darkness, lack of visual references and turbulence. “It is likely that the pilot flared rapidly to slow the helicopter. The tail contacted the water heavily, breaking off and causing the subsequent loss of control.” The helicopter then rotated and struck the water again with substantially more force. The life raft mounting bracket failed, and the raft was pinned in the wreckage. Both emergency locator transmitters also sank with the aircraft.

The occupants survived the impact and escaped from the helicopter. The pilot, who was wearing a life vest, died of hypothermia; the passenger, who was not wearing a life vest, drowned. Although they had been available, an immersion suit was not used by the pilot and a passenger-transportation suit was not used by the passenger.

“None of those who flew on [the helicopter] the day of the accident had received helicopter emergency egress/water survival training,” the report said. “Regulations do not require this training, and it was [available from but] not required by the operator.”

The pilot had flown helicopters in Newfoundland for the Canadian Coast Guard for 27 years. He had 20,000 flight hours. “He was not instrument-rated and did not have a night endorsement,” the report said.

Loose Coupling Causes Tail Rotor Failure

Eurocopter AS 365N Dauphin. Substantial damage. No injuries.

Winds were from the north at 15 kt, gusting to 25 kt, when the helicopter, facing southwest, lifted off from a hospital-rooftop heliport in Valparaiso, Indiana, U.S., for a medical services flight to Chicago, Illinois, on July 14, 2005. The pilot established a 4- to 6-ft hover and began a right pedal turn. Despite his continued application of right antitorque pedal, however, the helicopter stopped turning when it reached a westerly heading, the NTSB report said.

“The aircraft then went into a sudden and uncommanded yaw to the left,” the pilot told investigators. “I was unable to stop the yaw, and by the time I was heading 090 degrees, the tail hit a roof structure just west of the pad [and the aircraft] then rolled on its right side.” The pilot, physician, nurse and patient were not injured.

Examination of the helicopter showed that the fenestron — tail rotor — drive shaft had failed about 6 in (15 cm) aft of the main gearbox. The report said that the failure was caused by excessive play in the tail rotor drive shaft coupling, which had been installed improperly by the operator’s maintenance personnel. ●

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Preliminary Reports				
Date	Location	Aircraft Type	Aircraft Damage	Injuries
March 3, 2007	Ruhnu Island, Estonia	Britten-Norman Islander	destroyed	3 NA
The occupants received unspecified injuries when the airplane struck trees and crashed on final approach in fog.				
March 5, 2007	Zell am See, Austria	Aerospatiale 322/Diamond DA-20	destroyed	8 fatal
All seven occupants of the helicopter and the pilot of the airplane were killed when the aircraft collided at about 3,600 ft near a ski slope.				
March 7, 2007	Vreden, Germany	Eurocopter EC-120B/Robinson R22	minor/substantial	2 minor, 4 none
The helicopters collided while hovering at Stadtohn Airport. The four occupants of the EC-120 were not injured; the two occupants of the R22 received minor injuries.				
March 7, 2007	Yogyakarta, Indonesia	Boeing 737-400	destroyed	22 fatal, 118 NA
The airplane, en route on a scheduled flight from Jakarta, overran the 7,215-ft (2,199-m) runway and came to a stop in a rice paddy, where it was destroyed by fire.				
March 8, 2007	Mogadishu, Somalia	Ilyushin IL-76TD	destroyed	15 none
The airplane, en route from Entebbe, Uganda, was on final approach when a projectile fired from a small boat struck the fuselage near the left main landing gear and caused a fire. The airplane was landed safely. The only fire-fighting vehicle available at the airport had to be fueled and reached the airplane about an hour later.				
March 8, 2007	Kauai, Hawaii, U.S.	Aerospatiale AS 350BA	substantial	4 fatal, 3 serious
The pilot reported hydraulic system failure before the air-tour helicopter crashed while landing at Princeville Airport.				
March 9, 2007	Lilongwe, Malawi	Piper Seneca	destroyed	2 fatal
Visual meteorological conditions prevailed when the airplane crashed on a farm field at 0405 local time, soon after departing from Lilongwe for a charter flight to Karonga.				
March 11, 2007	Headcorn, England	de Havilland Turbo Beaver	destroyed	1 fatal, 8 NA
The airplane stalled and crashed during takeoff for a training flight. The pilot was killed; the eight parachutists received unspecified injuries.				
March 11, 2007	Kauai, Hawaii, U.S.	McDonnell Douglas 369FF	destroyed	1 fatal, 3 serious, 1 none
The air-tour helicopter was in cruise flight near the shoreline of Haena when the output shaft and rotor blades separated from the tail rotor gearbox. The helicopter struck trees and crashed during an attempted emergency landing on a campground.				
March 12, 2007	Dubai, United Arab Emirates	Airbus A310	substantial	236 NA
The airplane came to a stop near the end of the 13,124-ft (4,000-m) runway with the nose landing gear collapsed after the flight crew rejected the takeoff. There were no fatalities.				
March 14, 2007	near Salvador, Brazil	Rockwell Shrike Commander	destroyed	4 fatal
During a charter flight from Petrolina to Salvador, the flight crew reported that they had a technical problem and were losing altitude. The airplane crashed in an open field 60 km (32 nm) north of Salvador.				
March 17, 2007	Samara, Russia	Tupolev Tu-134A-3	destroyed	6 fatal, 51 NA
Runway visual range was 200 m (700 ft) in freezing fog when the airplane struck terrain 400 m (1,312 ft) from the runway threshold while landing.				
March 20, 2007	Fort Lauderdale, Florida, U.S.	Piaggio P180 Avanti	substantial	2 none
The airplane, on a positioning flight from Teterboro, New Jersey, veered right when the first officer applied the right wheel brakes to correct a left drift on landing. The left main landing gear collapsed.				
March 20, 2007	Newark, New Jersey, U.S.	Boeing 777	NA	NA none
The flight crew rejected the takeoff after a contained failure of the right engine. The airplane was towed back to the ramp.				
March 23, 2007	Mogadishu, Somalia	Ilyushin IL-76TD	destroyed	11 fatal
The airplane had delivered equipment needed to inspect another IL-76TD that was struck by a projectile while landing on March 8. While taking off for the return flight to Minsk, Russia, the airplane was struck by a missile and crashed.				
March 23, 2007	Istanbul, Turkey	Airbus A320-200	substantial	NA none
The right main landing gear separated when the airplane overran the runway while landing. There were no injuries.				
March 29, 2007	Sanford, Florida, U.S.	McDonnell Douglas MD-80	NA	152 none
The airplane was landed with the nose landing gear retracted.				
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.				