Lost in the Lights

A lightplane was still on the runway when a regional jet was cleared for takeoff.

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



Collision Narrowly Avoided

Bombardier CRJ700, Cessna 172. No damage. No injuries.

n air traffic control (ATC) operational error resulted in a near collision between the CRJ and the 172 at Lehigh Valley International Airport in Allentown, Pennsylvania, U.S., the evening of Sept. 19, 2008, according to the report by the U.S. National Transportation Safety Board (NTSB).

Night visual meteorological conditions (VMC) prevailed. The CRJ had 56 passengers and four crewmembers aboard for a scheduled flight from Allentown to Chicago. The 172 was inbound on a private flight from Caldwell, New Jersey, with the pilot and two passengers aboard.

At 1935 local time, the CRJ flight crew told the airport local traffic controller that they were holding short of Runway 06 and were ready for takeoff. The controller told the crew to continue holding short for traffic landing on Runway 06. About two minutes later, the 172 passed over the approach threshold, and the controller told the

CRJ crew to taxi into position and hold on the runway.

The controller then asked the 172 pilot where he would be parking. The pilot said that he would be parking at Hangar 7, which is on the south side of the airport. The controller told him to turn right onto Taxiway A-4 and to remain on the local control radio frequency while taxiing to the hangar. Taxiway A-4 is 1,450 ft (442 m) from the approach end of Runway 06, which is 7,600 ft (2,316 m) long and 150 ft (46 m) wide. The control tower is on the north side of the airport and about 1,400 ft (427 m) from the midpoint of Runway 06. The airport does not have a ground-movement radar system.

The controller, who was hired by the U.S. Federal Aviation Administration (FAA) in September 2007 and was certified on the local control position at the Allentown airport in August 2008, told investigators that he had received very little training on night operations because of insufficient traffic. "Review of his training documentation showed that of his 82 hours' training time on local control, 49 minutes were at night," the report said.

After issuing taxi instructions to the 172 pilot, the controller believed that he saw the 172's landing light begin to move right toward Taxiway A-4. He turned his attention to an airplane in the landing pattern to the northwest. The controller told

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the pilot of that airplane to extend his downwind leg to accommodate the departing CRJ. "He then turned around and scanned the runway," the report said. "The runway appeared to be clear, [so] he cleared [the CRJ crew] for takeoff. The local controller did not recall actually seeing [the 172] clear of the runway."

About 20 seconds after the CRJ crew was cleared for takeoff, the 172 pilot told the controller that he had missed Taxiway A-4 and requested permission to turn right on Taxiway B, which is about 3,100 ft (945 m) from the approach end of the runway. The controller responded, "No delay, turn immediately." The pilot acknowledged the instruction. "When asked what he meant by that clearance, the local controller stated that he wanted the aircraft to get off the runway even if it had to turn into the grass," the report said.

The controller-in-charge that night was the ground controller, who was hired by the FAA in 2001 and was certified for all positions in the airport control tower. "The ground controller first became aware of the incident when he heard a pilot say something unusual on the local control frequency," the report said. "He did not completely catch what was said, but it did not sound right. Much later, after reviewing the voice tapes, he realized that what he had heard was [the 172 pilot] saying that he had missed the turn at A-4. ... After hearing the transmission, he looked up and saw the lights from [the CRJ] at an angle on the runway. ... He did not know what had happened."

The 172 pilot was turning the airplane right of the runway centerline and toward Taxiway B at 1938 when he saw the regional jet pass by on the left side of the runway. "The pilot stated that at no time did he hear the jet either being cleared into position and hold or being cleared for takeoff," the report said. "[He] stated that he would have contacted the tower immediately had he heard the takeoff clearance being issued while he was still on the runway."

The CRJ captain said that indicated airspeed was about 110 kt when he heard the 172 pilot radio that he had missed his turnoff. "When

we heard that transmission, my first officer noticed a white nav[igation] light off to the right of centerline that appeared to be an aircraft," he said. "He immediately made the callout to 'abort, abort,' and we made an immediate high-speed evasive abort with maximum braking and reverse thrust to the left side of the runway. ... We missed the Cessna by 10 ft [3 m] at 40 kt as we passed off his left wing."

The CRJ crew decided to cancel the flight and to taxi the airplane back to the gate for inspection. They notified their airline's safety department about the near collision, and the safety department reported the incident to NTSB.

"Asked what caused the incident, the local controller stated that he just 'lost the Cessna in the lights," the report said.

NTSB determined that the probable cause of the near collision was "the failure of both tower controllers to maintain awareness of the position of [the 172] and ensure that the aircraft was clear of the runway before issuing a takeoff clearance to [the CRJ]."

Confused Crew Taxis off Runway End

Boeing 747-400. No damage. No injuries.

he 747 flight crew, inbound from their home base in London with 349 passengers and 17 cabin crewmembers the night of Dec. 26, 2006, conducted an uneventful landing on Runway 30 at Miami International Airport. It was their first night landing on Runway 30, and they intended to make a right turn onto a high-speed taxiway at the end of the runway.

The pilots looked for green lights leading to the taxiway. "The taxiway at the end of the runway did not have taxiway lead-off lights extending to the center of the runway, but the taxiway did have centerline lights beginning at the runway edge, per FAA requirements," the NTSB report said.

After the 747 was inadvertently taxied past the taxiway, the pilots saw a line of red lights about 50 m (164 ft) ahead and, believing that the lights marked the end of the runway, continued to taxi. "The first officer started to turn off the runway using the blue taxiway edge lights as

a guide but immediately stopped the airplane when both he and the captain realized the light pattern was not as expected," the report said.

The 747 had been taxied off the departure end of the runway at less than 10 kt and had struck two approach lights for Runway 12. "The airplane was not damaged and, after being towed from the overrun area, taxied to the gate under its own power," the report said. One of the tires on the center landing gear was changed before the airplane returned to London.

The red lights that the flight crew had observed were obstruction lights mounted on top of an instrument landing system localizer antenna about 500 ft (152 m) beyond the runway threshold. "The actual runway threshold was marked with eight red lights, consisting of four lights extending out from each side of the runway edge," the report said. "FAA advisory material for new runway threshold lighting installations and for reconstruction of existing installations recommends that threshold lights extend from the runway edge inboard toward the center of the runway and not outboard like those on the incident runway; however, existing installations, such as those on the incident runway, were permitted by the FAA."

Although the pilots were confused by the red lights, "they had numerous other indications available to identify their position on the runway," the report said.

Distraction Cited in Runway Excursion

Cessna 510 Citation Mustang. Substantial damage. No injuries.

he pilot was flying a standard terminal arrival route to McClellan–Palomar Airport in Carlsbad, California, U.S., the morning of April 19, 2008, when the primary flight display (PFD) on the right side of the panel began to flicker. The airplane was descending through 28,000 ft about five minutes later when a "PFT" — autopilot preflight test fail — warning appeared on the left PFD.

The NTSB report said that the autopilot self-test, in addition to being performed before flight, "is performed automatically in response to some detected anomalies while

in flight, and its failure will result in the autopilot, yaw damper and electric pitch trim becoming inoperative."

The pilot told investigators that, after the PFT warning appeared, "he immediately felt heavy control forces on the control yoke that he had to exert to fly the airplane," the report said. The pilot did not follow the emergency checklist procedures for a PFT warning, which include pulling the autopilot circuit breaker (CB) and waiting five minutes before resetting the CB. The checklist says that if the warning ceases, the autopilot may be re-engaged, but if the warning persists, the CB must be pulled and the airplane hand-flown.

The pilot said that he hand-flew the Mustang for about 45 minutes. "The pilot noted that he was overwhelmed with the electrical failures and fatigued from maneuvering the airplane by hand for such a long duration," the report said.

Nearing the airport, the airplane entered instrument meteorological conditions (IMC) and descended below the overcast at 2,600 ft. The pilot told ATC that he would conduct a visual approach to Runway 24. The airport traffic controller said that the airplane appeared to be "quite high" and that she asked the pilot, "Do you think you can make it?" The pilot replied, "Yes."

The Mustang was in landing configuration when it crossed the runway threshold, but airspeed was 102 kt — 15 kt above the target landing speed. The pilot said that he was aware of the excessive airspeed but believed that the runway was long enough to accommodate a delayed touchdown. The airplane touched down beyond the midpoint of the 4,897-ft (1,493-m) runway. "The airplane approached the apex of the sloping runway, and the pilot began to clearly distinguish where the runway surface ended, which was sooner than he had anticipated," the report said.

The pilot determined that a go-around was not possible and purposely ground-looped the Mustang, apparently to avoid an overrun. The main landing gear collapsed, and the airplane came to a stop south of the runway. The pilot and his three passengers were not injured.

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In its probable-cause statement, NTSB said that the pilot's failure to follow the autopilot PFT emergency procedures and his distraction with the flickering PFD contributed to the accident. Investigators found no relationship between the anomalies: the PFT warning had been generated by a yaw damper servo reset prompted by a load monitor, and a faulty screen had caused the PFD to flicker.

Escape Slide Separates in Flight

Boeing 767-200. Minor damage. No injuries.

nbound from Zimbabwe with 206 passengers and 10 crewmembers, the 767 was on final approach to London Gatwick Airport the evening of Aug. 3, 2008, when the flight crew felt an unusual roll motion while extending the flaps 15 degrees. The motion stopped, and the crew landed the airplane without further incident.

"During their post-flight external inspection, the crew noticed that the compartment for the right overwing escape slide was open and the slide itself was missing," said the report by the U.K. Air Accidents Investigation Branch (AAIB). "The actuating mechanism was hanging from the compartment and had caused slight dents and perforations in the adjacent fuselage skin."

A few days later, a deflated escape slide was found on the ground below the approach path to Gatwick. "By that time, the aircraft had been repaired and had flown several subsequent sectors," the report said. "The aircraft had been repaired and dispatched without a detailed inspection to determine the cause of the slide compartment opening."

Boeing records show two broad categories of overwing escape slide detachment. The first involves activation of the inflation system while the slide compartment is closed and latched. "This 'blows' the compartment door open as the slide inflates and leaves telltale evidence." The AAIB determined that the incident at Gatwick fit the second category: "[This] involves, generally, a combination of incomplete latching and, in some instances, an element of misrigging or worn components," the report said.

TURBOPROPS

Violent Encounter Below 'Very Dark Cloud'

Raytheon King Air B300. Substantial damage. No injuries.

MC prevailed for the positioning flight from Alabaster, Alabama, U.S., to Tuscaloosa, Alabama, the afternoon of April 4, 2008, but there was a squall line in the vicinity of the destination airport. The pilot said that while nearing Tuscaloosa at 3,000 ft, he saw a very dark cloud ahead. The cloud was about 300 ft (91 m) thick and appeared to be precipitating virga.

The pilot said that a "violent and rapid turbulence event" was encountered as the King Air passed about 500 ft below the cloud. "During the turbulence episode, the airplane descended several hundred feet, but the pilot was able to maintain control," the NTSB report said. Neither the pilot nor the copilot was injured.

The airplane was landed without further incident, and the pilots observed no damage during their preflight inspection for the subsequent flight. Four days later, however, maintenance technicians found that the main spar in the left wing had been substantially damaged. A subsequent inspection by a Raytheon field engineer indicated that the airplane had encountered loads in excess of design limits.

"The airplane most likely flew under either a roll cloud or a shelf cloud," the report said. "Severe or extreme turbulence should always be expected in the vicinity of these cloud types."

Weather Deteriorates During VFR Flight

Pacific Aerospace Cresco 08-600. Destroyed. One fatality.

he pilot conducted a ferry flight from Tully, Queensland, Australia, to Ingham — about 100 km (54 nm) south — the morning of Aug. 16, 2007, to have maintenance performed on the single-turboprop aircraft, which was configured to transport parachutists. The maintenance included correction of a reported nosewheel shimmy and a scheduled dynamic propeller balance.

The Cresco departed from Ingham at about 1454 local time for the return flight. "The aircraft did not arrive at Tulley, and the next



day the pilot and aircraft were reported missing," said the report by the Australian Transport Safety Bureau (ATSB), which noted that initiation of search-and-rescue activities was delayed because the pilot had not filed a flight plan.

On Aug. 18, the wreckage was found at 1,280 ft in mountainous terrain 24 km (13 nm) south of Tully. "The circumstances of this occurrence were consistent with controlled flight into terrain resulting from VFR [visual flight rules] flight into IMC," the report said. The aircraft was certified for VFR-only flight in Australia. The private pilot had 397 flight hours, including 25 hours in the Cresco, and did not have an instrument rating.

A maintenance technician told investigators that there were clear skies in the vicinity of Ingham but the weather to the north, toward Tully, was poor when the aircraft departed. An amended forecast issued by the Bureau of Meteorology called for a broken ceiling at 800 ft with tops at 2,000 ft, scattered cumulus with bases at 1,800 ft and tops at 12,000 ft, and occasional visibility of 2,000 m (1 1/4 mi) in rain showers.

Position Awareness Lost During Approach

Embraer Bandeirante. Destroyed. One fatality.

TSB concluded that the pilot likely misinterpreted the airplane's position during an instrument approach in IMC to Bennington, Vermont, U.S., the morning of Aug. 4, 2006. The pilot was conducting a positioning flight from Binghamton, New York. The Bandeirante was scheduled to have maintenance performed in Bennington.

The airport had calm winds, 10 mi (16 km) visibility, scattered clouds at 500 ft and an overcast at 900 ft. The pilot conducted the VOR (VHF omnidirectional radio) approach to Runway 13 and a missed approach at the missed approach point (MAP), then requested and received clearance from ATC to conduct another VOR approach.

The VOR is the final approach fix (FAF), which has a minimum crossing altitude of 3,400 ft. After crossing the FAF, the procedure calls for a descent to 1,880 ft, the minimum descent altitude. The MAP is 6 nm (11 km) from the

VOR and 1.3 nm (2.4 km) from the runway. Field elevation is 827 ft.

"There was no dedicated distance measuring equipment (DME) aboard the airplane," the report said. "Instead, distance was determined by the use of an IFR [instrument flight rules] approved GPS [global positioning system] unit."

Investigators believe that the pilot did not reprogram the GPS receiver after conducting the missed approach. "Unless the pilot reprogrammed the unit, the last waypoint entered would have remained at the airport, rather than the VOR," the report said. "The pilot then most likely mistook the airport position for the VOR position and displaced the beginning of the descent by 6 nm."

The approach controller provided radar vectors to help the pilot rejoin the final approach course, then terminated radar services and approved a change to the airport advisory radio frequency. Recorded radar data showed that the airplane crossed the VOR at 3,500 ft and then remained at that altitude, rather than descending, until reaching the airport. "At the airport, the airplane began a descent," the report said. "The airplane continued to travel outbound from the airport, along the same course, until the last radar contact about 2 nm [4 km] to the southeast at 2,600 ft." The Bandeirante struck rising terrain at 2,100 ft about 6.5 nm (12.0 km) beyond the airport.

Sink Rate Not Arrested on Final

Pilatus PC-6/B2-H4. Substantial damage. No injuries.

fter conducting one of several parachute drops the afternoon of May 4, 2008, the pilot returned to Clonbullogue (Ireland) Airfield to pick up more parachutists. Surface winds were from 210 degrees at 12 to 15 kt as the Turbo Porter was established on final approach to Runway 27. The aircraft likely encountered turbulence from air flowing over an adjacent hangar, said the report by the Irish Air Accident Investigation Unit.

"On short finals, the aircraft sank below the normal approach profile, and the pilot responded by increasing power," the report said, noting Investigators believe
that the pilot did
not reprogram the
GPS receiver after
conducting the
missed approach.

that the power increase was not sufficient to arrest the sink rate.

The pilot pulled back the control stick in an attempt to clear a hedge that borders the airfield. "The underside of the aircraft fuselage contacted the boundary hedge," the report said. "A low fence post embedded in the hedge caused substantial damage to the underside of the fuselage. The aircraft continued its landing run without further incident."

Control Lost During Takeoff on Snow

Douglas DC-3T. Substantial damage. One minor injury.

uring takeoff from McMurdo Station,
Antarctica, the night of Dec. 20, 2007, the first officer made a callout when the DC3, modified with turboprop engines and skis, accelerated through 60 kt. The first officer said that when the captain subsequently moved the control wheel aft to lower the tail and attain a flight attitude, she felt the tail wheel contact the hard-packed snow.

"Just before the airplane became airborne, the right wing lifted and the left wing struck the snow-covered terrain, which pivoted the airplane 90 degrees to the left," the NTSB report said. "Both main landing gear assemblies collapsed, and the airplane came to rest on its belly, sustaining substantial damage to the left wing and fuselage." The first officer's seat belt had opened when the DC-3 pivoted, and her head struck the overhead console. The captain and eight passengers were not injured.

NTSB concluded that the probable cause of the accident was "the captain's decision to lift off before attaining a proper airspeed, resulting in a loss of control during takeoff."

PISTON AIRPLANES

'Options for Maneuvering Were Severely Limited'

De Havilland DHC-2 Beaver. Destroyed. Six fatalities, three serious injuries.

he pilot had landed the float-equipped Beaver on Traitor's Cove, 20 nm (37 km) north of Ketchikan, Alaska, U.S., on Aug. 16, 2007. The winds were light, and the water was calm during the landing. The pilot said that, while

waiting for the passengers to return from their ground tour, the wind velocity increased, and choppy waves formed in the cove.

The NTSB report said that after boarding the passengers for the return flight to Ketchikan, the pilot — who had 17,000 flight hours, including 7,000 hours in type — decided to take off toward the shoreline, in the direction of rising terrain, to avoid some of the wind and waves. "The pilot said that he had never taken off in that direction before," the report said.

After lifting off the water and climbing about 400 ft, the pilot began a left turn. "While attempting this turn, the pilot encountered a downdraft, was unable to climb above the terrain and stalled the airplane about 60 ft above the ground," the report said. "The downdraft made it more difficult to avoid descending into the rising terrain." Six passengers were killed by the impact and postaccident fire; the pilot and two passengers were seriously injured.

NTSB said that the probable cause of the accident was "an inadvertent aerodynamic stall resulting from the pilot's poor decision making and inadequate planning and execution when he took off toward nearby rising terrain, in strong winds, under circumstances where his options for maneuvering were severely limited."

Fuel Starvation Leads to Ditching

Piper Cherokee Six. Substantial damage. Two serious injuries.

uring departure from Brampton Island, Queensland, Australia, for a charter flight to Mackay on April 3, 2008, the Cherokee's engine lost power at about 400 ft. "The pilot turned the aircraft left approximately 30 degrees to face into the wind and to be parallel with the wave tops on the sea below," the ATSB report said.

Before ditching the aircraft, the pilot declared an emergency and told the passengers to open the cockpit and cabin doors. He also attempted unsuccessfully to restore power by manipulating the throttle and mixture control, and activating the electric fuel pump. He did not reposition the fuel-tank selector valve, however.



The pilot suffered an eye injury and one passenger sustained bone fractures when the Cherokee decelerated rapidly on contact with the water. The aircraft remained afloat about one minute, but all five occupants were able to evacuate before it sank. They donned life vests and were picked up by a rescue helicopter.

The report said that the takeoff likely was conducted with the fuel-selector valve positioned to the right tip tank and that the power loss occurred when the fuel in that tank was exhausted.

Bird Strike Cripples Trainer

Piper Seminole. Destroyed. Two fatalities.

he airplane crashed inverted in a bog in Browerville, Minnesota, U.S., during a night cross-country training flight on Oct. 23, 2007. "Data recovered from the airplane's flight display system indicated that the airplane was in stable flight ... at 4,500 ft and 160 kt when it abruptly departed from controlled flight," the NTSB report said.

The airplane rolled and yawed left, and pitched nose-down; it then entered a right roll that continued until it struck the bog about 30 seconds after the upset began. Examination of the wreckage revealed that the left half of the horizontal stabilator was bent upward about 90 degrees, which was not consistent with damage to the rest of the airframe, the report said. Microscopic examination and DNA testing of material found inside a tear on the skin near the left wing tip indicated that the airplane had been struck by at least one Canada goose.

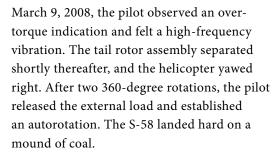
NTSB determined that the bird strike had damaged the stabilator and resulted in the control loss. "Contributing to the accident was the night lighting condition, which precluded any possibility of the flight crew seeing the bird(s) prior to impact," the report said.

HELICOPTERS

Blade Failure Causes Tail Rotor Separation

Sikorsky S-58HT. Substantial damage. One serious injury.

fter lifting construction equipment from the top of a 620-ft smokestack in Belmont, West Virginia, U.S., on



NTSB said that the probable cause of the accident was the fatigue failure of one of the four tail rotor blades. "Detailed examination of the separated blade revealed that its skins had cracked due to fatigue and that the blade then separated due to overstress," the report said.

Patrol Flight Encounters Vortex Ring State

Eurocopter AS 350B3. Destroyed. One fatality, one serious injury.

he helicopter was being maneuvered about 150 ft above ground level and at an airspeed between 20 and 30 kt during a border-patrol flight near San Elizario, Texas, U.S., on May 22, 2007, when it began to spin right. The helicopter then descended rapidly to the ground, struck a parked pickup truck and rolled over. The pilot was killed, and the observer was seriously injured. No one on the ground was hurt.

A helicopter maintenance technician who witnessed the accident said that the engine was "screaming" but the rotor system sounded like it was slowing down, "sucking or chopping air."

Noting that density altitude was 5,433 ft, the NTSB report said that the helicopter had entered a vortex ring state from which the pilot had insufficient time or altitude to recover. "A fully developed vortex ring state is characterized by an unstable condition where the helicopter experiences uncommanded pitch and roll oscillations, has little or no cyclic authority and achieves a descent rate [as high as] 6,000 fpm," the report said. "A vortex ring state may be entered during any maneuver that places the main rotor in a condition of high upflow and low forward speed."



DateLocationAircraft TypeAircraft DamagMarch 2San Miguel, VenezuelaBeech King Air 100destroyed	
	ge Injuries
	6 fatal
The King Air was on a visual flight rules flight from Caracas when it struck a mountain while approaching Valera conditions.	a in instrument meteorological
March 4 Maridi, Sudan Cessna 208 substantial	5 none
The pilot turned back to the airport after the engine failed on takeoff. The Caravan overran the runway and struemergency landing.	uck a tree during the
March 4 Saint Martin, Netherlands Antilles Bell 206B substantial	3 none
The pilot landed the helicopter in shallow water near a beach after the engine lost power.	
March 6 Bangalore, India Hindustan Aeronautics Saras destroyed	3 fatal
The prototype twin-turboprop pusher airplane crashed during a test flight intended to evaluate engine-out ch	naracteristics.
March 9 Jakarta, Indonesia McDonnell Douglas MD-90-30 substantial	172 none
Heavy rain and strong winds prevailed when the MD-90 overran the runway on landing.	
March 9 Magombe, Uganda Ilyushin Il-76T destroyed	11 fatal
The airplane crashed in Lake Victoria shortly after taking off from Entebbe for a night cargo flight to Mogadish	u, Somalia.
March 10 Aberdeen, South Dakota, U.S. Cessna 402B substantial	1 none
Low visibility and strong winds prevailed when the 402 landed hard on Runway 31 during a cargo flight.	
March 11 El Indio, Texas, U.S. Hughes 269 substantial	2 serious
Heavy rain and gusty winds prevailed when the pilot attempted to land on a trailer. The helicopter rolled over beneath the trailer.	after a skid became entangled
March 12 Atlantic Ocean Sikorsky S-92A destroyed	17 fatal, 1 NA
The helicopter was en route to an offshore platform when the pilot declared an emergency and reported a ma problem. The S-92 was found inverted after it was ditched 31 nm (57 km) off the coast of St. John's, Newfoundl one survivor.	
March 13 Healy, Alaska, U.S. Helio Courier substantial	3 none
The pilot was flying the ski-equipped airplane low over the airfield, creating tracks in the snow in preparation f struck high brush and crashed.	for landing, when the Courier
March 14 Buckland, Alaska, U.S. Piper Chieftain substantial	1 none
The pilot said that braking action was nil when the cargo airplane overran the runway and struck a snow bank. the previous day without incident and said that the sun apparently had melted a layer of snow that had refroze	
	7 fatal, 4 serious
March 19 Quito, Ecuador Beech King Air 200 destroyed	
The King Air was on a military training flight when it struck the top of a four-story apartment building during a	an approach in fog. All five
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This information, gathered from various government and media sources, is subject to change as the investigations of the accidents and incidents are completed.