



Attempts to Retrieve Carry-on Baggage Increase Risks During Evacuation

Predeparture safety information and forceful evacuation commands help cabin crews to persuade passengers not to take personal belongings. Flight attendants must have backup plans for coping with passengers who disregard the command to “leave everything.”

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FSF Editorial Staff

To keep passengers from taking carry-on baggage during an evacuation, flight attendants must exert strong influence to overcome misperceptions and to elicit behavior that often contradicts passengers' preferences, cabin safety specialists said. Many flight attendants do not have the opportunity to practice these skills, however, except during evacuation drills. A 1997 accident report on the evacuation of a Lockheed L-1011 described a few of the challenges.¹

“The [cabin crew onboard leader] asked the second officer to assist people as they came down the slide,” the report said. “As [passengers] came down the slide, they began colliding and piling up on each other at the bottom of the slide. He shouted for the flight attendants to slow the evacuation, but later reported that, as far as he could tell, the rate of the evacuation did not slow. The flight attendants reported that some passengers were still attempting to take their carry-on baggage with them in spite of being told not to do so. Purses and bags were found scattered on the ground at the bottoms of the slides.”

As passengers crawl, walk or run down the aisle, those who retrieve carry-on baggage often create tripping hazards or create clutter near the exits as they drop pieces, said Lisa Kolodner, an aviation safety inspector (cabin safety) for the U.S. Federal Aviation Administration (FAA).²

“If passengers are carrying something, they are not focused on following crewmember instructions,” Kolodner said. “This could cause them to lose situational awareness — especially about hazards that could cause injury.”



The U.S. National Transportation Safety Board (NTSB), in a 2000 study of 46 emergency evacuations, found that nearly half of passengers who had carry-on baggage with them reported that they had attempted to remove a bag during evacuation.³ “Passengers exiting with carry-on baggage were the most frequently cited obstruction to evacuation,” the report said.

In 2002, FAA provided additional guidance on an earlier requirement that flight attendants receive training on “the handling of carry-on baggage during an emergency.” This guidance included the following:⁴

- “Flight attendants should be forceful and commanding as they instruct passengers to leave everything on the aircraft;
- “The carrier should develop procedures to handle carry-on baggage during an evacuation, teach the procedures to flight attendants as part of their approved training program, and practice the procedures during evacuation drills;
- “[Procedures] could include throwing [a piece of carry-on baggage] out the aircraft forward or aft of the evacuation slide, throwing it back into the cabin into empty seats, etc.; [and,]
- “Another consideration is the fact that a battle with a passenger over a piece of carry-on baggage may be more detrimental to the rapid egress of the aircraft than allowing the passenger to take it ... ”

Fully effective solutions to this problem have been elusive, said two NTSB survival factors specialists.

“I remember being stunned while reading the statement of a passenger who took time to get carry-on baggage as the last passenger out of an aircraft after an in-flight fire,” said Nora Marshall, chief of the NTSB Survival Factors Division. “Half of the people on that airplane died of smoke inhalation. This passenger said something like, ‘It took me a few extra minutes to evacuate because I had to find my train case from under the seat and take it with me.’ This individual had been exposed to smoke during the flight; there was clearly a need to get off that airplane very quickly.”⁵

One McDonnell Douglas DC-10 accident involving an intense cabin fire provided an example of lives saved by occupants adhering closely to the “leave everything” policy, Marshall said.

“The airplane was full of airline crewmembers on a positioning flight,” she said. “Because they all were trained, they got off fast and there were no fatalities. If the flight had included passengers, the accident may have had fatalities.” The level of risk may not be apparent at the time of a particular evacuation, but when life-threatening events occur, “seconds really do count,” she said.

In examples reviewed during the evacuation study, items such as large framed pictures, crutches and a guitar were taken off aircraft, said Robert Molloy, Ph.D., transportation research analyst, NTSB Office of Research and Engineering.

“Getting through an over-wing hatch without anything in your hands is hard enough, but one person first worked the guitar out through the hatch,” Molloy said. “After one recent accident involving an active fire burning and crash forces that split the airplane fuselage, one person told NTSB, ‘I had to go back to get my violin.’ In interviews after that accident, others said that the flow had been slowed by people trying to grab their back packs. One passenger blocked access to the exit for a whole row of passengers while he was trying to get his briefcase.”

Carry-on baggage may impede evacuation if flight attendants do not use all available exits. For example, they may take pieces of carry-on baggage from passengers and throw them in front of a usable exit that has not been opened, he said.

“In one case, the cabin crew initially did not believe that the situation warranted slide deployment at every available door,” Molloy said. “They had not thought about the situation possibly getting worse, causing the unopened exit to have a pile of baggage in front of it — a blockage created by the process of evacuation. In another documented case, involving brief delays at one exit, people in the queue ended up dying. Any delay at an exit can affect people down the line.”

Pieces of carry-on baggage also can become missiles when there is no place to stow them.

“NTSB found that some passengers got to the door with their carry-on baggage, then recognized that jumping onto the slide while carrying the bag was not a good idea, so they threw it down the slide and hit other passengers,” Marshall said.

In some incidents reviewed for the study, passengers apparently did not perceive a life-threatening situation because they did not encounter visible hazards such as a fire or structural damage to the airplane, she said.

“In such incidents, passengers may have a different perception than the cabin crew; passengers may think that the evacuation is a regular deplaning,” Marshall said. “In one example that was not part of the study, one passenger who could not see an engine fire lowered the coat rack on a DC-10 during evacuation and thumbed through it to get a garment bag.”

After another evacuation, NTSB investigators interviewed two passengers who had been sitting next to each other in the first-class cabin.

Marshall said, “One said, ‘The flight attendants did not help us, they did not give us any instructions or guidance.’ The other said, ‘The flight attendants gave us perfectly clear instructions on what to do.’ We knew that the flight attendants had shouted commands — such as leave everything, remove shoes, come this way — because the commands were loud and very precise on the cockpit voice recorder.” The first passenger apparently did not remember hearing these commands, she said.

“Training should get flight attendants thinking about more than the command,” Molloy said. “If passengers do come at them with bags, the cabin crew will have thought about the level of arguing they should do and what they should do with the bags if they take bags from passengers. Their on-the-spot decisions then will be somewhat more informed.”

The purpose of taking away pieces of carry-on baggage is for the individual passenger’s protection, but “there just has to be a point where you say, protection of this individual does not outweigh the safety of the group of passengers,” he said.

Judging the correctness of flight attendants’ decisions to take away passengers’ pieces of carry-on baggage, or not to take them, can be difficult or impossible for accident investigators.

“We give flight attendants the benefit of the doubt — they know what is going on in the situation,” Marshall said. “We look for the cabin crew to follow what was in their training program. If the training program tells them to take every bag, for example, we ask first whether they followed this training. If they did not, what was their reason? If the reason was logical, we would recognize that there is a decision-making component in actual evacuations, which will be different from what they have done in training.”

Damage to slides caused by carry-on baggage has occurred rarely, so the risk is not well understood. Slides currently in

service vary in their resistance to cuts and punctures, however, and crewmembers may not know whether slides on a specific airplane conform to the most current protective-reflective coating standards. The risk of passenger injury is much higher than the risk of damage to slides, she said.

Marshall cited the following examples:

- “One over-wing exit of a narrow-body airplane was blocked because a large passenger was carrying a bag, and the combination of the bag and body size caused the passenger to become stuck in the open hatch. Initially the passenger would not let go of the bag. A flight attendant on the wing was able to get this passenger out the exit; [and,]
- “On one video recording, one passenger was carrying two suitcases on the wing while others were wandering up and down trying to figure out how to get off the wing with their carry-on baggage.”

Accident investigations and incident investigations showed that many passengers left everything — as instructed before takeoff — or handed over their carry-on baggage to the cabin crew while evacuating, Molloy said.

“I have heard in some airline predeparture videos, ‘If you are asked to evacuate, please leave everything behind,’” Marshall said.

Instructing passengers to leave everything is appropriate whenever deplaning involves a possible threat to safety, said Kolodner.

“Commands must be concise — giving the most direction in the least words without being misunderstood,” Kolodner said. “Evacuation training also should emphasize *why* passengers should not take carry-on baggage.”

FAA does not specify the words, but recommends that any command should say exactly what to do, she said. For example, one airline teaches the command “leave everything” while another teaches “leave belongings.” (Specialists at one airline decided that in their operations, “leave belongings” would avoid passenger confusion about leaving life vests or flotation seat cushions in an evacuation after a ditching.)

“During the demonstration for evacuation certification of the McDonnell Douglas MD-11, we told passengers to ‘hurry up’ to get to the usable exit,” Kolodner said. “The command was ‘release seat belts, leave everything, come this way, hurry, hurry.’ One flight attendant, on her own, tried the command ‘move it’ during the demonstration; we then realized that ‘hurry’ was a little too polite and not strong enough. A more urgent undertone was helpful.”

The basis for passenger compliance is the commanding presence projected by each flight attendant during evacuation

— the authority of personal demeanor and a strong, assertive voice, she said.

“Uniformed crewmembers must instill in passengers that the crew is in charge; this assertiveness begins during boarding and must be maintained if an emergency occurs,” she said. “Eye contact is good, but because of possible darkness and smoke, passengers primarily need to hear a voice projecting commands very loudly because passengers may be in the middle of the cabin or may be disoriented.”

While using their commands, the cabin crew must think exactly what they want passengers to do and not to do. Typically, that means move immediately toward the flight attendant’s voice without stopping to open overhead bins or closets or to reach under seats.

“Well defined emergency-training modules enable crewmembers to change their language to fit the situation,” Kolodner said. “Every possible command cannot be covered, such as, ‘You, in the yellow shirt, leave that purse behind.’ Cabin crews

must choose the most effective methods to control passengers — whatever the situation warrants. That includes throwing a purse out of the airplane if necessary.”

Carry-on baggage brought to exits can set the stage for cascading problems.

“About four years ago, I interviewed one cabin crew that had been astonished at how much baggage passengers were bringing up the aisle during an evacuation,” Kolodner said. “The crew took bags from passengers between the two forward exits and threw the bags into the cross-aisle area, then threw

bags outside when they ran out of room. Some passengers handed their bags to the crew at the exit; others went down the slide with purses and smaller items. Taking bags created additional hazards because the cockpit door was between the two forward exits, and when the pilots evacuated, they encountered all of this piled baggage to cross.”

A flight attendant who sacrifices self-protection while handling noncompliant passengers may not be able to maintain situational awareness.

“While working in the confined assist space adjacent to an aircraft exit, flight attendants should continue to hold onto one assist handle to remain out of the flow,” Kolodner said. “If forced to argue with passengers or struggle with bags, they may lose their grip on the assist handle, making them very vulnerable to losing their footing, falling or being shoved out of the exit by passengers. We would not want any flight attendant to be pushed down the slide because someone was adamantly gripping a bag or fighting to keep a bag.”

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A flight attendant typically could not return to the cabin after being pushed down the slide, and the loss of the crewmember at an exit may affect the evacuation, she said. Moreover, empty seats near the usable exits — which seem to be the ideal place for throwing items taken from passengers — may become hazardous.

“A shift of the airplane attitude could cause any pile of baggage to shift, slide and come tumbling down onto people or fall into the aisle,” Kolodner said. “The flight attendant then would have to move bags out of the exit opening.”

Passengers who probably could maintain their balance if the airplane attitude shifted would be more prone to falling while trying to walk down an aisle with bags or to pass through a hatch while carrying pieces of carry-on baggage.

“To pass through over-wing exits, passengers have to use a leg-body-leg maneuver [stepping through the exit, then moving the torso, then pulling through the other leg], and they may lose their balance if they are carrying something,” Kolodner said. “They may expect to throw personal items out the exit first, but these items shift, slide off the wing, strike other people or create obstructions on the wing.”

Passengers who step off a slide, walk a few steps and then stop to retrieve a thrown bag, may not move quickly enough to avoid being struck.

Questions confronting cabin crews faced with less-than-ideal options may be reduced simply to one, she said: What will do the most good?♦

Notes

1. U.S. National Transportation Safety Board (NTSB). Aviation Accident/Incident Database. Report no. 20001208X08661, Aug. 7, 1997.
2. Kolodner, Lisa. Telephone interview by Rosenkrans, Wayne. Alexandria, Virginia, U.S. April 26, 2004. Flight Safety Foundation, Alexandria, Virginia, U.S.
3. NTSB. *Safety Study: Emergency Evacuation of Commercial Airplanes*. Report no. NTSB/SS-00/01. June 27, 2000.
4. U.S. Federal Aviation Administration (FAA). *Air Transportation Operations Inspector's Handbook, Order 8400.10*, Volume 3, *Air Operator Technical Administration*, Chapter 14, “Flight Attendant Training and Qualification Programs.” Section 1984, “Handling of Carry-on Baggage During an Aircraft Evacuation.” June 26, 2002.
5. Marshall, Nora; Molloy, Robert. Interview by Rosenkrans, Wayne. Washington, D.C., U.S. April 28, 2004. Flight Safety Foundation, Alexandria, Virginia, U.S.

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