

32 SECONDS...

13/04/2021



Analysis of the accident of an Atlas Air B-767-300 (cargo) operated for Amazon.com Services LCC at Trinity Bay, Texas, in February 2019.

Mach82 N°209

Francisco Cruz - Sepla Technical Department

Those were the seconds that elapsed from the time the co-pilot accidentally activated the Go Around mode switches on the gases at about 6300 ft and the impact the airplane had with the ground.



The NTSB's 141-page official report, approved in July 2020, highlights the selection processes established by the industry following the co-pilot's performance and the failure to comply with safety recommendations issued following the Colgan Air accident (2009) regarding pilot selection processes and training records.

The NTSB determined that the probable cause of the accident was the co-pilot's inappropriate response as a PF, due to accidental activation of the Go Around mode that caused him to become spatially disoriented (somatographic illusion) causing him to make nose-down inputs that placed

the B767 in a steep descent, which the crew was unable to recover. Contributing factors to the accident were the following:

1) Inadequate monitoring of the flight path by the captain and assuming control of the aircraft with the inputs from the co-pilot.

2) Deficiencies in the selection processes, which failed to detect the recurrent failures of the co-pilot in the training sessions of his previous operators. This deficiency consisted basically of responding impulsively and inappropriately when faced with an unexpected event and inability to remain calm during stressful situations in the simulator.

3) FAA's delay in implementing the *Pilot Record Database* in an efficient manner. This database, which was legislated in 2010 following the Colgan Air accident (2009) because of the poor performance of the captain of that flight, would have provided relevant information to Atlas Air about the co-pilot's performance and record. It must be said that this selection process was carried out by an agency external to Atlas Air.

In this article, we will focus on the aspect of the training history and selection processes to draw lessons that we can apply. Three NTSB members (Graham, Sumwalt and Landsberg), all pilots, said of this accident: "This accident should be a wake-up call to the industry. It is time for the industry to reevaluate its substandard pilots with continued training and performance deficiencies as well as those who cannot upgrade".

Flight progress and information from the captain and co-pilot

The flight from Miami was proceeding normally, with another pilot seated in the cockpit carrier (non revenue pilot). The captain was acting as PM and the co-pilot as PF. The accident occurred at 12:39 central standard time (daylight local time). The cruise and descent phase was normal. The sequence of the accident was as follows, the autopilot was engaged:

1) In approach phase below 10000 ft AMSL and descending, the co-pilot was actuating the speedbrakes and asked the captain for flaps 1 (slats extension). Probably due to the light turbulence at that time, the co-pilot's wrist or watch accidentally activated the Go Around gas mode switch. This occurs at 12:38:31.

2) During the following six seconds, the thrust of the engines and the pitch of the aircraft logically increase. None of the crew members called out or took action to disconnect the automatics. The captain continued with ATC communications. The co-pilot retracts the speedbrakes and exerts nose down inputs. These inputs increase, causing the aircraft to enter a steep descent (on the B-767 you can over command with manual inputs on the horns but without disengaging the autopilot). At

12:38:44, after some exclamations, the co-pilot says: "whoa... (where's) my speed, my speed...we're stalling ", then said "stall" at 12:38:51. The NTSB verified with the FDR data that neither the stall warning beeped, nor the speed parameters were consistent with a stall or near stall situation.

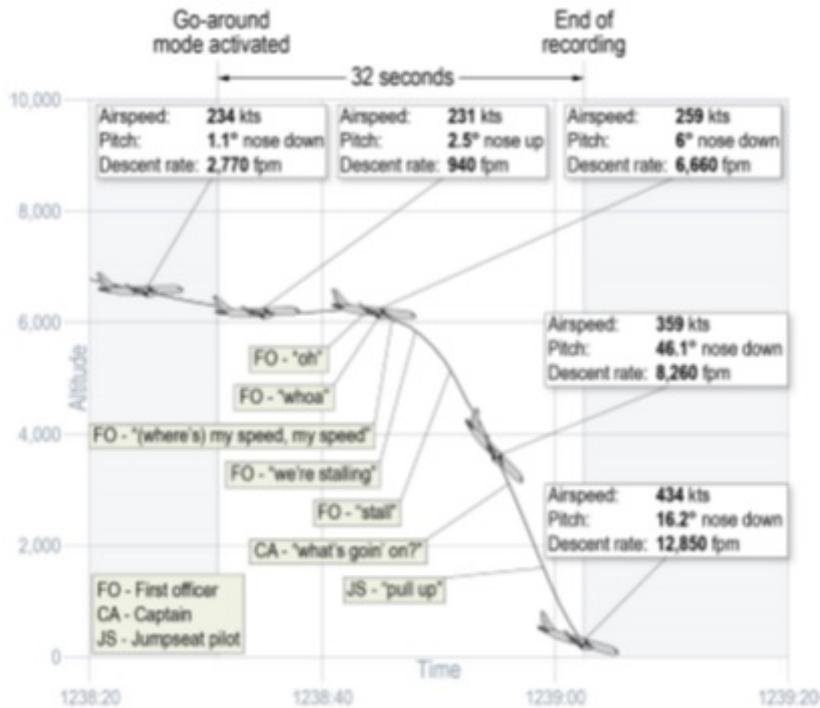


Figure 1. Selected airplane parameters and crew statements during final seconds of flight.⁸

3) At 12:38:56, the captain asks "what's goin'on". 3 seconds later, the pilot sitting in the carrier shouts "pull up". At that time, the elevators move with nose-up inputs, which last 7 seconds, insufficient to counteract the steep descent of the aircraft (see figure 1 of the report). The aircraft impacts the ground at high speed at 12:39. The top of the cloud ceiling was between 2000 and 3000 ft AGL.

Captain and co-pilot information.

The 60-year-old **captain**, holding B-757, B-767 and ERJ-145 type certificates, was hired as a co-pilot for Atlas Air in September 2015, and promoted to B-767 captain in August 2018. At the time of the accident, he had accumulated 11,172 total flight hours, of which 4,235 were as PIC. As a B-767 pilot he had 1,252, of which 157 were as PIC on this aircraft. He also held a flight instructor certificate for single engine, multiengine and instrument. There is insufficient information regarding the 72 hours prior to the accident to verify his fatigue status.

The captain, who was previously with ExpressJet flying the ERJ-145, failed the B-767 rating test at

the time he joined Atlas Air as a co-pilot, and completed additional training to pass the rating course. Upon promotion to 767 captain, he did pass the associated courses.

The co-pilot, age 44 and holding type certificates of B-757, B-767 EMB-120. ERJ-145, ERJ-170 and ERJ-190, was hired by Atlas Air in September 2017. As of the date of the accident, he had a total of 5,073 hours, of which 1,237 as PIC. As a co-pilot, he had accumulated 520 hours on the B-767. There is insufficient information regarding the 72 hours before the accident to verify his fatigue status.

His history in terms of training records is as follows:

- In July 2017 he failed the oral exam (takeoff and landing performances and aircraft systems), completed 4.5 hours of training, and eventually passed the exam. After completing 5 sessions of fixed simulator training, he was not recommended to perform simulator training due to his difficulty in completing the SOP's. He received an additional 4 hours of training, and finally completed the FFS course.

- The FFS qualification course was not a bed of roses either: in early September he failed his practical test. The instructor who examined him commented to the investigators that he was very nervous, had poor situational awareness, over commanded the aircraft, did not go ahead etc. Finally, at the end of September, he passed the course after additional training. The instructor who conducted this test thought the co-pilot had a confidence problem. Since then, he passed the recurrent training he had.

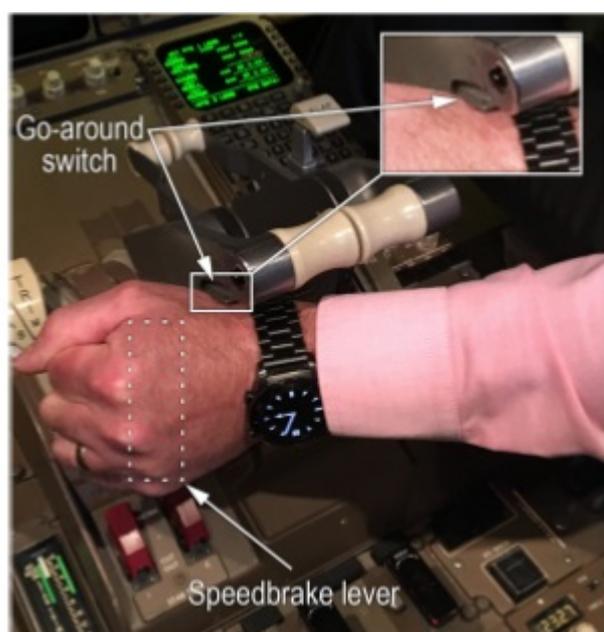


Figure 12 of the report showing the interaction between the co-pilot's left wrist with the

"Go Around" mode switches.

It must be said that the fleet chief believed that factors outside the co-pilot's control (FO) may have affected his initial training, such as the interruption of simulator sessions in Miami due to a hurricane and some family issues the FO was experiencing.

Table. First officer's former employers and training difficulties.

Former Employer (year employed)	Within PRBA 5-Year Disclosure Requirement?	FO Disclosed Employment to Atlas?	Training Difficulty
Mesa (2015-2017)	Yes	Yes	Embraer ERJ175: Unsuccessful attempt to upgrade to captain
Trans States (2014)	Yes	Yes	Embraer ERJ145: Failed oral examination, failed ATP checkride, unsatisfactory line check
Charter Air Transport (2013-2014)	Yes	Yes	
Air Wisconsin (2012)	Yes	No	Canadair Regional Jet: Did not complete FO initial training
CommutAir (2011)	No	No	deHavilland DHC-8: Did not complete FO initial training
Air Turks and Caicos (2008 to 2010)	No	Yes	

The airlines the co-pilot worked for prior to Atlas Air were:

- Mesa Airlines (February 2015 - July 2017): failed the ERJ 175 captain exam and left the company for Atlas Air arguing career extension.
- Trans States Airlines (March to September 2014). Failed exams, online inspections and left the company arguing personal reasons.
- Charter Air Transport (February 2013 March 2014), EMB-120 FO.
- Air Wisconsin Airlines (April to August 2012). Did not complete initial training for Canadair Regional Jet and resigned arguing personal reasons.
- CommutAir (May to June 2011). Did not complete initial training for the DHC-8.
- Air Turks and Caicos (June 2008 to June 2010). EMB 120-FO until he was fired.

When the co-pilot applied for Atlas Air he did not say he had previously worked for Air Wisconsin or CommutAir, nor that he had not completed the training at that airline.

A Mesa Airlines instructor said that when faced with unanticipated situations, he would get very nervous and start pushing buttons and selectors without thinking about what he was pushing. The co-pilot, however, did not recognize his shortcomings. Another Mesa Airlines instructor recalls his pilot performances as the worst he had seen in his entire career, and that he always had excuses such as blaming his simulator partner, his instructor or even the hotel.

Organizational information

As of the date of the accident, Atlas Air had 2,922 employees, of which 1,755 were pilots at various bases in the USA. Its fleet consisted of 33 B-747-400s, four B-747-8Fs, 10 B-767-200s and 26 B-767-300s.

At a 2016 Line Training Captains meeting, the FAA Principal Operations Inspector in attendance commented that they had their concerns regarding pilots with lack of experience in large aircrafts.

In the co-pilot selection process at Atlas Air, which was conducted by an outside agency, he was listed as "highly recommended," which connoted that no simulator testing was required. In 2018, 336 pilots joined the company, and between 1,200 and 1,400 applications were being received. Findings 16 and 17 of the final report are very clear about these outside agencies that failed to check prior training histories and the lack of operational personnel (pilots) to review these histories.



Atlas Air pilots who fly for Amazon.com demonstrate in front of Amazon.com's annual shareholder meeting, Wednesday, May 22nd, 2019, in Seattle. Photo by Ted S. Warren, AP, published in the Miami Herald.

Findings

The final report is highly critical with the non-compliance of previous recommendations addressed to the FAA regarding the training record of pilots with poor training history (Colgan Air 2009 accident, in which the captain's records were deficient). And with all this information, they are right: The NTSB has investigated nearly 10 accidents in the last 30 years in which pilots with poor training records have been hired by companies and have been involved in accidents attributed to their improper performance.

This is where airline selection processes come into play. In a 2012 report, IATA concluded that only a small number of airlines had a structured, evidence-based pilot selection process.

In Europe, the runway departure of an A-321 from Lyon in 2013 was striking. ECA itself published an article "The bitter truth" in which the cost-driven approach to crew selection and training was a key factor.

In my opinion, the accident report places little emphasis on organizational factors, and as with the Colgan Air accident, the company was going through a period of expansion in which production aspects outweighed safety aspects. An article published in the Miami Herald on June 12th, 2019 "Pilots at MIA's biggest cargo airline warned execs a crash was coming. Then a plane went down",

explains the situation the company was going through (previous incidents, growth, mergers, etc.), something the final report does not adequately address. You can read it in the link at the bibliography for your reference, as it is well worth reading.

In terms of lessons learned and mitigating measures, it is interesting to note the following considerations:

- "Atlas Air Inc.'s human resources personnel's reliance on designated agents to review pilot background records and flag significant items of concern was inappropriate and resulted in the company's failure to evaluate the first officer's unsuccessful attempt to upgrade to captain at his previous employer."

- Operators that rely on designated agents or human resources personnel for initial review of records obtained under Pilot Record Improvement Act should include flight operations subject matter experts early in the records preview".

Bibliography:

- *Rapid Descent and Crash into Water Atlas Air Inc. Flight 3591. Boeing 767-375BCF, N1217 A Trinity Bay, Texas, February 2019. NTSB*
- [NTSB animation](#)
- *ECA Implementation of Evidence Based Training. Position & detailed comments in response to NPA 2018-07*
- [Pilots at MIA's biggest cargo airline warned execs a crash was coming. Then a plane went down.](#) Taylor Dolven, Miami Herald, 12 junio 2019. **PDF article in downloadable file below**