



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 24, 2020

Attachment 1 – Flight Crew Statements

OPERATIONAL FACTORS

DCA19CA081

Interviewee: Matthew A. Pernosky

Date: March 5th, 2019

Location: Via Teleconference

Time: 1134 PST

Via Teleconference: Captain Pernosky – Event Captain; Shawn Etcher, Katherine Wilson – NTSB; Patrick Hempen – FAA; Jonathan Gourdeaux – Compass Airlines; Alexander Lindsey – Airline Pilots Association (ALPA); Rob Plunkett, Senior Labor Relations Counsel for Airline Pilots Association (ALPA).

Captain Pernosky was represented by Mr. Rob Plunkett, Senior Labor Relations Counsel for the Airline Pilots Association (ALPA).

During the interview, Captain Pernosky stated the following:

He was 32 years old and was a captain at Compass Airlines. He was a line pilot at Compass Airlines and had been a line captain since January 2017. His date of hire was April of 2015.

He had an Airline Transport Pilot (ATP) pilot certificate with a type rating for the EMB170/190¹. He flew Beech 1900s in the right seat for Great Lakes Airlines. He had not been a checkairman at Compass Airlines.

He had approximately 4,284 total hours of flight experience with 2,745 hours of total flight experience in the EMB-170/190, and of those hours he had approximately 1,588 total hours of flight experience in the EMB 170/190 as pilot in command.

He had an FAA First-class medical certificate which was issued on January 24, 2019 and had no limitations.

He was the pilot monitoring for the event flight.

He had one unsatisfactory checkride, which was for his initial certificated flight instruction (CFI) for his multiengine instructor (MEI) rating.

He began in aviation on his 18th birthday as a baggage handler at PSA Airlines. He started flight training at a local FBO² in 2007. He took a break from flight training for a few years and then attended Rocky Mountain College in 2009, where he obtained his private pilot certificate. He then became a flight attendant in Dubai for four months then he was a flight attendant for USAir for about a year. He tried to take a leave of absence from USAir so he could work on his pilot's license; however, was unable to get the leave and resigned from USAir. He continued flight training through ATP flight schools and worked as a flight instructor in 2012. He then moved back to Louisville, Kentucky, and worked as a line fueler at Louisville International Airport for a year. He

¹Embraer S.A. ERJ 170-100 STD, ERJ 170-100 LR, ERJ 170-100 SU, ERJ 170-100 SE, ERJ 170-200 STD, ERJ 170-200 LR, ERJ 170-200 SU, ERJ 190-100 STD, ERJ 190-100 LR, ERJ 190-100 IGW, ERJ 190-100 ECJ, ERJ 190-200 STD, ERJ 190-200 LR, ERJ 190-200 IGW. Source: FAA order 8900.1 Figure 5-88.

² Fixed Base Operator

was subsequently hire at the University of North Dakota as a flight instructor where he worked for 6 months. He then was hired by Great Lakes Airlines and moved to Denver. Once he had attained just over 1,500 hours of total flight experience, he applied and was hired by Compass Airlines. He had been based at all of Compass Airlines pilot bases during his career. He currently was based out of SEA³ and resided in the local area.

He had never been terminated or asked to resign from any of his previous employers.

He reported to the assistant chief pilot at SEA, then the system chief pilot at Minneapolis, Minnesota, (MSP) which was where Compass Airlines' headquarters was located.

Pilot staffing was sometimes challenging, but in the preceding 6 months he felt that they had been "decently staffed." He further stated that captains were able to drop trips in the last few months. During the spring and summer they had been extending and junior manning captains; however, he had not been junior manned or extended.

When asked how he would communicate any concerns he had, he stated that communicating the concern would depending on what he was dealing with. If it was on the ramp side, they would call operations, if maintenance they would call dispatch and maintenance, if it was more operational with a flight, he would call dispatch via telephone. If there was weather, he was concerned about and the dispatch was not seeing the same concern, then he would get the on-duty chief pilot. Compass Airlines also allowed anyone to have the ability to stop the operation if they felt it was unsafe, which he stated was called the "Destination Safety Letter." He further stated that if a pilot stopped the operation for something unsafe there would be no punitive action to that pilot.

Compass Airlines had ASAP⁴, FOQA⁵, SMS⁶, and a company form called "crew reporting." He had used the ASAP program and crew reporting before. They also had a safety hotline number with the SMS program that they could call. He had never experienced any problems with the ASAP program.

He stated that there was always an underlying pressure for on time performance. However, he always felt the flight could be completed safely was the most important. He could even add fuel with no issues as long as they would communicate that with the dispatcher.

He had not refused a flight at Compass. If he thought an aircraft with a deferred item on the MEL⁷ would not be suitable for an airport, he would communicate with dispatch and it was always worked out.

³ Seattle-Tacoma International Airport

⁴ Aviation Safety Action Program

⁵ Flight Operations Quality Assurance

⁶ Safety Management System

⁷ Minimum Equipment List which was a list that provided for the operation of aircraft, subject to specified conditions, with particular equipment inoperative which was prepared by an operating in conformity with, or more restrictive than, the MEL established for the aircraft type. Source: Skybrary

They had operated the flight from SEA to SNA⁸ as well as the accident flight. While operating the flight down to SNA, they were in constant communication trying to get PIREPs⁹ from air traffic control as the ride deteriorated. They were in constant communication with air traffic control but could not recall if they provided ride reports on the flight down. They also communicated with air traffic control and dispatch to get ride reports. They were given a PIREP by air traffic control near Palmdale Airport, which was at a lower altitude than they were and not on their route. They were communicating with their dispatch via ACARS¹⁰, which reported no additional PIREPs.

When asked if the dispatcher for their flight from SEA to SNA was the same dispatcher they had for the accident flight, he stated that he thought it was a different dispatcher but was not certain.

When on the ground and he wanted to communicate with dispatch, he always found a phone call worked best. In flight he normally used ACARS, they also could use ARINC¹¹, and Delta radio. He felt that on a typical flight ACARS worked best.

They did not listen to HIWAS¹² or transmit a call to flight service station.

On the morning of the accident he woke up at 0345 with a van time of 0425 from the hotel in Portland, Oregon, and 0515 showtime at the airport. Their first flight departed at 0600 from Portland for SEA. They were originally scheduled to keep the airplane all day but the first airplane they had been assigned for the flight to SNA had a thrust reverser inoperative and he communicated his concern with dispatch. When they were enroute to SEA they received a message that they had been assigned another airplane. For the flight from SEA to SNA, he had seen some SIGMETs¹³ for turbulence. The first half of the flight from SEA to SNA was smooth and slowly deteriorated. The last 40 minutes of the flight the flight attendants were to remain seated. He described the turbulence as light to moderate turbulence, and they got an ACARS notification from dispatch on the severe turbulence PIREP near Palmdale. They had decided to keep the flight attendants and passengers seated for the remainder of that flight. Once they arrived at SNA, they had about 30 minutes on the ground before the flight back to SEA. The exterior preflight was done by the first officer while he checked the paperwork provided to them for the flight and he thought it would mirror the flight down from SEA. The dispatch release showed mostly moderate turbulence for SIGMETs and one for severe turbulence that was below their filed altitude. The severe turbulence was a major concern as they flew through the area in which it was forecasted but they were at a higher altitude on their way down as well as on this accident flight. They decided that the flight attendants were to remain seated and he called the flight attendant after they passed through 10,000 feet on the climbout to remind them to stay seated. He also made an announcement to the passengers about the turbulence and that the seatbelt sign was going to remain on. About 40 minutes into the flight they encountered smooth air. He described the turbulence for the flight as progressing from moderate chop, to light chop, to smooth air. Air traffic control reported that there was occasional light chop in the area, which he felt was the standard phrase from air traffic control.

⁸ John Wayne-Orange County Airport, Santa Ana, California

⁹ Pilot Report

¹⁰ Aircraft Communication Addressing and Reporting System

¹¹ Aeronautical Radio, Inc

¹² Hazardous Inflight Weather Advisory Service

¹³ Inflight Weather Advisories for Significant Meteorological Hazards

He decided to keep the seatbelt sign on since the flight attendants were going to be doing a beverage service. He contacted the flight attendants and informed them they could get up but told them to take their seats if they felt it was bumpy as the experience in the cabin was different than the cockpit. Sometime after they encountered smooth air, they received a traffic advisory from air traffic control. They were between cloud layers and classified it as mostly IMC¹⁴ and he was not able to visually acquire the other aircraft. After they got the traffic alert from air traffic control, they encountered severe turbulence and everything in the flight deck, that was not secured, went airborne. Subsequently they got a TCAS RA¹⁵ to descend. The first officer disconnected the autopilot to get the flight path vector into the RA box. He joined on the controls since the first officer was having difficulty in flying the flight path vector into the box, which was difficult for both of them. He was not sure how much altitude they gained or lost. Simultaneously, once the received the audible “clear of conflict,” the severe turbulence subsided. He notified air traffic control of the turbulence and the RA. The first officer contacted the flight attendant to see if there were any injuries. They divided their duties and the first officer flew the airplane and operated the radio, while he contacted dispatch via ARINC. They decided that Reno, Nevada¹⁶ (RNO) was the best diversion alternate. Dispatch sent NOTAMs¹⁷ and weather to them via ACARS. The first officer had already declared the emergency with air traffic control and for the remainder of the flight the first officer flew the airplane and he continued with pilot monitoring duties.

Once they landed at RNO, they did the standard taxi to gate Bravo 8. When they got to the gate, he made an announcement to the passengers to remain seated as medical personnel would be boarding the aircraft. After the injured were attended to and they received the okay from the medical personnel they deplaned the passengers. The first officer and flight attendants coordinated the deplaning of the passengers while he was communicating with dispatch via telephone.

Once everyone was off the airplane, he performed an interior and exterior inspection and wrote up the turbulence to maintenance. He and his first officer went to the hospital, after they completed all their required checklist and phone calls, for standard drug and alcohol testing. He thought they landed around 1303 and finished with the testing about 1800.

When asked what process he went through to get a different aircraft for their flight to SNA, he stated that he accepted the aircraft at Portland. He had lots of time so he used his extra time to free text on the ACARS with his dispatcher to see if there was another aircraft available that they could take to SNA. During the flight to SEA, dispatch notified them that they had another aircraft and provided them with the gate information of the other airplane.

While in SEA preparing for the flight to SNA, he read through the dispatch release and felt that it was straightforward.

Most of the last 40 minutes of the flight to SNA was moderate chop with pockets of moderate turbulence.

¹⁴ Instrument Meteorological Conditions

¹⁵ Traffic Collision Avoidance System Resolution Advisory

¹⁶ Reno-Tahoe International Airport, Reno, Nevada

¹⁷ Notice to Airmen

When asked what criteria he used to determine the severity of the chop or turbulence, he stated that in the EMB175 light chop was what they experienced most of the time when it was not smooth, which he described as momentary light changes and nothing that would upset a cup of coffee. Moderate would be changes in attitude and may spill coffee if on a first-class tray table. He further described the difference as chop was momentary and turbulence would be more continuous. If he did not know how to categorize the turbulence, he would pull up the turbulence chart in the flight operations manual.

On the flight to SNA he could not recall if they were in IMC or VMC¹⁸ and not sure of the radar usage. It was his practice that if he could not see in front of him, he would have the weather radar on. He could not recall the settings he had set for his weather radar; however, it was his general rule that while operating in the terminal area, he would have it on 12.5 mile range, if further along on the departure he would have it set to the 25 mile range, and while enroute he would set it to either the 50 or 100 mile range. He would adjust the tilt function of the weather radar to be able to paint the ground at the far end of the range selected. He would also select target mode, which would identify something further out than the range he had selected. He did not use the turbulence function because he felt that the turbulence function was only to detect turbulence in area where there was precipitation and that it did not detect clear air turbulence. Most of the flight the weather radar was not painting anything except the ground and a little rain shower on their departure from SNA. There was no precipitation being painted in the area they hit the turbulence. He knew that different colors on the radar yielded different turbulence and that came from experience.

He tried to mentor first officers that he flew with to use weather radar when flying. The system was user friendly and they had the ability to have the weather radar on the PFD¹⁹ and the terrain on the MFD²⁰. He stated most pilots did not always know how to do that. When he was operating a flight, he liked to keep an eye on the weather.

He further provided that the weather radar could be set independently on each pilot's side. They could vary the tilt on each side, and he worked the radar that was operating on his instruments.

He did not hear any ride complaints while operating the accident flight on the air traffic control frequency. He queried the controller about the ride report, since it was smooth, and he thought the worst he heard on the frequency was light chop.

He could not recall if he told the passengers while in flight to leave their seatbelts on. He recalled having a lengthy discussion with the flight attendants about the seatbelt sign and what to expect during the flight. The flight attendants were fine with him letting them go and provide beverage service, with the caution he gave them about the bumps.

They received an air traffic control advisory to look for traffic, and the TCAS RA came after they encountered the turbulence. They did not see the other aircraft as they were between cloud layers and when they encountered the turbulence they were in IMC at the time. There was no convective activity from what he could see, while operating between cloud layers, and he described it as

¹⁸ Visual Meteorological Conditions

¹⁹ Primary Flight Display

²⁰ Multifunction Display

“pretty flat blanket” below and above. They then entered the bases of the clouds above them, when they encountered the turbulence.

He felt most of his embedded convective activity experience came from his time flying in the Rockies with Great Lakes. Embedded activity was trained at Compass and they were taught to use the weather radar when they might be in the area of potential activity.

He was not wearing his shoulder harness at the time of the turbulence encounter. He typically released his shoulder harness when they were passing through 10,000 feet, but some pilots left the harnesses on longer. At the time of the event he was using his 3-point restraint.

He could not recall for sure, but he knew they did not go above FL340²¹ during the turbulence encounter.

The guidance for the seatbelt sign is located in Chapter 8 of the Flight Operations Manual, where it provides guidance about flight attendants out of their seat during turbulence. However, he felt that most of the experience and training came while flying the line during or during IOE²² with company check airman.

He briefed the flight attendants about the flight prior to departure. He stated that the briefing was normal and almost always came from the captain.

When asked how turbulence training was accomplished at Compass Airlines, he stated that turbulence training was done through distance learning and computer-based training. They did wake turbulence training in the simulator and that enroute turbulence was mostly computer-based training and flying the line with company check airman.

He felt that weather radar was not designed to detect turbulence but reflectivity of precipitation. Through his experience he could anticipate what the turbulence may be based on what the radar was indicating on the returns. If the weather radar was not painting anything, typically the only turbulence they might encounter would be clear air turbulence. If the radar was indicating different colors, or intensities of precipitation, that could vary the amount of turbulence they might feel. If it was indicating green in color then the turbulence would typically be light, if it was yellow in color then he would anticipate moderate turbulence.

When asked if he received any other alerts in the cockpit, he stated that the TCAS RA was the only alert in the cockpit he noticed that he could recall.

He was on the controls with the first officer for a period of time, which he estimated as probably a few seconds, but he was not exactly sure how long he was assisting on the controls. He felt the entire event lasted less than 10 seconds. There was no transfer of control during the event or after the event.

²¹ Flight Level 340 which is an aircraft's altitude at standard atmospheric pressure, expressed in hundreds of feet (i.e. 34,000).

²² Initial Operating Experience

He had the 3-point lap belt on and during the turbulence encounter his bag did not move but sunglasses and paper became airborne during the event. When they encountered the turbulence, he pressed the “PA” button and said “seatbelts”. After the event he communicated with the flight attendants about what was needed for the emergency and provided them with information via the company “TEST” acronym. He made an announcement to the passengers that they were diverting to RNO and that if they were in the aisle to brace themselves for landing. There was no plan to evacuate passengers after landing.

When asked to describe the 72-hours preceding the event, he provided the following information. The night prior the event he went to bed around 1930 and fell asleep around 2145. Once he fell asleep, he had no problem staying asleep.

On the 12th they operated one flight from SEA to Portland, Oregon, that morning and that was all they operated for the day. He woke up around 0500 on the 12th. He was off duty on the 10th and 11th, he could not recall when he actually went to sleep on those nights, but typically he was in bed between 2200 and 2300 and woke up between 0900 and 1000. There was nothing unusual that he could recall from his normal sleep pattern.

He typically had about two cups of coffee during the day. He felt rested on the 13th. When he got to the airport, he got a cup of coffee which was typical for him.

He did not smoke or use tobacco, he did take asermonic medication which he reported to the FAA when he obtained his medical certificate. It was a medication that he took daily as it was a long-term medication for asthma. He did not use any illicit drugs.

He did drink alcohol socially. He would have a glass of wine or two with dinner when he was home but did not recall the last time he had an alcoholic beverage.

He had not been involved in any previous accidents or incidents nor disciplined for any of his performance. He has not received any acclamations or “atta boys”.

He had not experienced turbulence like what they encountered on the accident flight, at any time during his career. He had heard stories of other pilots experiencing turbulence, but he had never experienced that severe turbulence and not sure much could prepare a pilot for it, other than experiencing it.

He had experienced no changes to health in the preceding 12 months and he rated his health as “good”. There had been no changes in his financial or personal status in the preceding 12 months.

He had no limitations on his medical certificate and no issues with hearing.

During the three days preceding the event he had not taken any medication that would have affected his performance on the flight.

Typically once a flight was in cruise the workload diminished a lot but due to the turbulence the enroute portion, on the day of the event, he felt their workload was greater than normal.

There was no difficulty or issues with the aircraft, and he stated it was a “good airplane.”

He liked working for Compass Airlines and he wished he did not have to worry about compensation in the future.

He and the FO had only flown together the day prior and the day of the accident. He felt that the first officer was competent and more laid back than others he had flown with and that he felt they were a good fit to fly together.

He felt the first officer’s response to the turbulence was very confident on the controls and the first officer’s response with the RA was “textbook” and there were no issues.

He could not speak on the reason everything became airborne, but he thought the injuries were a combination of the RA and the turbulence. They experienced a severe updraft and downdraft.

The weather briefing they are provided from dispatch was a packet. They did have iPads or EFBs²³ that were loaded with the Lido charts and the WSI²⁴ app only worked when connected to WI-FI which they did not have available to them in flight.

The dispatch release must be printed out when on the ground, as it was not sent to their EFB.

On a layover they would connect to WI-FI in order to update their Lido charts. Other than the onboard weather radar and ACARS they had no other means to update their weather.

When asked if he had ever been to Compass Airlines dispatch office, he stated that he had during his upgrade training. Part of that training required that they meet and shadow dispatch and maintenance for a little time. Dispatch and maintenance were located in building C at the Minneapolis Airport, which allowed him to see what dispatch was like.

He felt the accident flight’s dispatch release was a standard Compass flight release and everything seemed normal. He wished more important information was highlighted on their dispatch release, so it was more tailored for their flight.

The release provided them with SIGMETs, and AIRMETS²⁵ listed, but usually it also listed all of those that occurring in the west half of the country. Sometimes the dispatcher would include remarks for PIREPS along the route of flight. He always appreciated when the dispatcher did that, even though he still double checked the weather.

He felt the events leading to the accident were the “perfect storm” as he was not sure anything would prevent this in the future. He felt it would help to have real-time weather radar on their EFBs which would be helpful more than just the aircraft’s on-board radar. He felt the real time viewing of PIREPs along their route of flight would be really important.

²³ Electronic Flight Bags

²⁴ The Weather Company

²⁵ Airmen’s Meteorological Information

He could not recall if they had to download the weather into WSI; however, he did not have anything loaded into WSI before the accident flight departed SNA. He also was not familiar with the vertical profile forecasting feature in WSI. He felt that the WSI app would be more useful if they had a briefing in person and received training on it other than computer-based training, which was all they received now. He wished they had training on WSI like they had received on the Lido chart app.

When he recalled the accident sequence, he stated that they felt the negative g's first, then complied with the RA, but he was not certain the exact order. He did feel they hit the severe turbulence first and then the RA but not sure which caused the injuries. He was assisting the first officer in getting the FPV²⁶ into the RA command box which he focused on exclusively and could not recall much else around that time.

They did not get in touch with AirMed. He only talked with the dispatcher over ARINC, due to the flight's close proximity to RNO. He decided it would not be wise to call AirMed as they were diverting to RNO.

He found that when on a quick turn the amount of time to check the weather packet and program the FMS²⁷, and then look at the WSI app, would be tight to make the 30-minute window. If there was a lot to brief, he felt the flight would take a delay.

He felt that the training on the WSI was on the computer-based training but not sure when he accomplished it. The other app they used on their EFB was the Lido app. While on the airplane, the iPads were always on airplane mode, but the charts were always valid on the day of flying and the Lido app would alert them when charts had expired.

The aircraft's turbulence penetration speed in the flight levels would be Mach 0.76 or 270 knots; if they were below 10,000 feet, they were limited to 250 knots or less. The accident flight had been filed for Mach 0.78 and the first 40 minutes, when they were experiencing the chop, they maintained Mach 0.76 and then, once they encountered smooth air, they accelerated to Mach 0.78, but he was not sure if they reached Mach 0.78 or not. After the turbulence encounter, the air was smooth all the way to RNO and he could not recall what speed they were flying after the turbulence encounter.

After the turbulence encounter, the first officer called the flight attendants and the first officer reported that there were injuries in the back. Both he and the first officer divided up their duties. He primarily interacted with the flight attendants and dispatch.

When he called back to get an update and to find out what was happening in the cabin. He stated that he originally talked to one flight attendant and that flight attendant said the cabin was a mess and the cart was upended in the aisle; she was not sure how to get the cart upright. He told her not to worry about making the cabin look nice and gave her the required emergency briefing; it was a yellow emergency. He provided her with an estimated time enroute, which he thought would be

²⁶ Flight Path Vector

²⁷ Flight Management System

8-10 minutes maybe 15 as time after the event was hard to recall. He also told her that once they were on the ground there would probably be some fire trucks meeting them and following them to the gate and for passengers to remain seated until medical personnel came on board. That conversation was pretty brief, and he called back one more time before landing. He made another announcement to the passengers telling them they were going to RNO for landing.

He felt the weather packet was fairly standard, sometimes they would have graphical depiction of weather but in order to obtain the graphical depiction the operations at the station had to have and it had to be printed on a laser printer, otherwise they received textual depiction only. He further stated that most stations only had a dot-matrix printer and not a laser printer. The graphical weather depiction was something he always liked to receive; however, they were usually available on the shorter flight segments and he felt they were not as helpful on the short flights and would be nicer on the longer flight segments. After he looked at the weather on their dispatch release, he then reviewed the NOTAM section. The first thing he would do was look at the destination airport especially if familiar with the departure airport, if they had just flown into the airport. He would look to see if they needed an alternate. If they needed an alternate, he made sure the alternate selected was acceptable. Then he would look for convective SIGMETs, then SIGMETs and look at the severity and if it would impact the flight. Most days he saw a “handful of SIGMETs” and they were taken with a “grain of salt.” Normally it would take him about 5 minutes in order to review the release for the legalities. As far as operating around SIGMETs they were permitted to fly through areas that were advertised severe, unless a PIREP confirmed the severity.

When asked if he had talked with the injured flight attendant, he stated that he had talked with her when they were at the hospital. They stayed together as a crew unit and the flight attendant said she was in the aft galley writing notes as she was doing a line check when they encountered the turbulence. She crouched down to brace herself and when the negative g’s occurred, she flew up and hit her head on the ceiling.

Interview concluded at 1331 PST.

Interviewee: Grant M. Abrams

Date: March 5th, 2019

Location: Via Teleconference

Time: 0801 PST

Via Teleconference: First Officer Abrams – Event First Officer; Shawn Etcher, Katherine Wilson – NTSB; Patrick Hempen – FAA; Jonathan Gourdoux – Compass Airlines; Alexander Lindsey – Airline Pilots Association (ALPA); Rob Plunkett, Senior Labor Relations Counsel for Airline Pilots Association (ALPA).

First Officer Abrams was represented by Mr. Rob Plunkett, Senior Labor Relations Counsel for the Airline Pilots Association (ALPA).

During the interview, FO Abrams stated the following:

He was 30 years old and a First Officer at Compass Airlines. He was a line pilot and had held a line for about 8 months. He had been employed at Compass since January of 2018.

He had an Airline Transport Pilot (ATP) certificate with a rating for multiengine airplane, commercial pilot certificate with rating for single-engine, and type ratings in the EMB170/190 and SAAB 340 as second in command (SIC).

At the time of the event he had about 2,233 hours of total flight experience with 674 of those hours in the EMB175 and 433 hours in the SAAB 340 as SIC. He had a current first-class medical certificate that was issued on November 16, 2018 and had no limitations.

His most recent training event was his 6-month recurrent at Compass which occurred in October of 2018.

He had one unsatisfactory checkride in his pilot history, which was his single-engine commercial checkride, which required only one item to be corrected.

He had not had any accidents or incidents prior to the accident flight.

He attended a flight school in Midland, Texas, from 2008 until 2011. He flew for a year and a half in Texas and then moved back to Oregon where he began certificated flight instructor (CFI) training. He stopped the training for about 2 ½ years and then continued his CFI training. He then worked flying a Caravan and then flew Saab 340s. Subsequently, he went and flew for Boutique Air, flying PC-12s, until January 2018, at which time he began to fly at Compass.

He had never been terminated or asked to leave any of his employers.

At Compass, he reported to the on duty chief pilot and has been working with one of the chief pilots about this accident.

He felt Compass had adequate staffing; however, he knew there was a national pilot shortage. There were a lot of captains leaving Compass and new first officers beginning at Compass.

They had the ability to report anything that was of concern to them via their ASAP program and crew reports. A pilot could always call the chief pilot if there was an immediate need to report a concern. He had only filed a couple of reports and that he only noticed they had been noted and closed out, but he did not look to see what the feedback was.

He has never felt pressured to complete a flight that he was not comfortable completing. There was sometimes pressure from a gate agent to get the flight out on time, but he never had pressure in completing a flight he was not comfortable with.

He had, in the past, interacted with company dispatchers. As a crew, they reached out to dispatch if there were issues in order to get amendments, new routings, new altitudes that differ by more than 4,000 feet. When on the ground, they typically communicated with dispatch via phone, in the air they could communicate with dispatch through ACARS and ARINC.

He could not recall talking with dispatch until they had encountered the severe turbulence.

When asked if they had the same dispatcher for their earlier flight from SEA to SNA, he stated that he could not recall.

When asked what dispatch typically would provide on a flight release, he stated that the dispatcher would provide everything for the flight, all fuel information, weather enroute and at the departure and destination, and alternate if necessary, SIGMETs, AIRMETS, takeoff and landing data, winds aloft, and route of flight.

He had seen dispatchers leave notes on the release involving something the dispatcher noticed such as fuel planning weather enroute; however, he could not recall if there was note on the accident flight's dispatch release.

On the day of the accident they had started in Portland, Oregon, for a flight to SEA, then SEA to SNA. He felt that that flight was important for their ride back, as it helped them experience the weather enroute. As they were reaching California, they began to experience light chop and changed their altitude to altitudes between flight level (FL)290 and FL350 and they were communicating with dispatch about the chop. The last approximate 45 minutes of flight, they had the flight attendants take their seat. There was one report of severe turbulence that they were aware of. They checked with each controller they checked in with about ride reports. Only one report was near Palmdale which was at a lower altitude than they would be at. They continued to SNA normally. Turnaround at SNA was normal, and the accident flight departed. They had the flight attendants remain seated for about the first 40 minutes of flight. They were cleared direct to Shafter (EHF) VOR²⁸ then direct Lakeview (LKV) from the departure. This provided them with a slightly early turn but was still "close" to their filed route. While at FL340, they experienced light to occasional moderate chop and the flight attendants remained seated. The turbulence, he felt, was in the vicinity of the area where they had gotten light to moderate on their flight down. After that area the flight was smooth. Clearing that area, they decided to keep the flight attendants seated a few minutes longer. Subsequently, they contacted the flight attendants and told them they could get up if they felt it was safe but to return to their seats if they had decided it was too "bumpy". They were being "overly cautious" and they had just light chop. They did not expect the ride to deteriorate. About 10 minutes later, they were given a traffic alert for another EMB 175 aircraft that was 1,000 feet above their flight path. They were in instrument meteorological conditions and on the same frequency as the aircraft above them; however, were unable to see the other aircraft. The ride went from smooth to severe quickly. They first had a vertical increase and then received a TCAS RA. He disconnected the autopilot, and "pushed the nose over" as part of their protocol. He felt it was challenging to get the nose in the downward position and it was challenging to get the flight path vector (FPV) into the RA box. At the same time, the mountain wave they had encountered turned from an updraft to a downdraft and he could feel the negative g's a little. It felt like a large jolt downward that lasted for about 8 seconds. Once that was over it smoothed back out and they climbed back up to FL340, reengaged the autopilot, and then checked in with the flight attendants. Initially the flight attendants said they had a lot of items in the aisle and coffee dripping from the ceiling. The captain made a PIREP and a TCAS report to air traffic control. The

²⁸ Very-high Omnidirectional Radial

line check flight attendant that was in the back of the airplane was able to communicate to them on the interphone, at which point she stated that she thought she had broken her arm. One passenger was in the lavatory, even though the seatbelt sign was on, and had a large gash on the head and was bleeding. They elected to divert to Reno, Nevada, as it was deemed suitable by the crew and dispatch, for medical assistance and declared a medical emergency. The flight landed uneventfully and once on the ground they had EMTs²⁹ meet them at the gate. Once parked at the gate, the EMTs came on and assisted the injured and assessed the other passengers. The EMTs then okayed everyone else to deplane. Once the passengers had disembarked, they made the necessary phone calls to their dispatch and everyone else they needed to contact including the SOC³⁰ and chief pilot. After the phone calls they went into the terminal. The lady with the head injury and the flight attendant went to the hospital and those were the only ones that did that he was aware of. Afterwards both pilots proceeded to the hospital for drug and alcohol testing.

When asked what guidelines they used to determine the severity of the turbulence, he stated that the determination of light or moderate chop was based on their definitions. He considered occasional light bumps to be classified as light chop. Moderate turbulence was more “coffee sloshing in the cup” but the aircraft was still under control.

On the flight from SEA to SNA they were in VMC most of the way. They did have the radar on for occasional periods on the accident flight. He usually had terrain on his side most of the flight as he did for the accident leg. When they encountered IMC on the accident flight, he did not have weather radar on his side, but could not recall if the captain did or not.

They did not listen to HIWAS or FSS³¹ during either flight; they used the information that was in their weather packet provided to them from dispatch.

They had the flight attendants take their seats when they encountered moderate chop which was their procedure.

Considering their flight down, they did not make any extra accommodations that he was aware of when it came to the flight back for fuel and routing. They were above the SIGMET for turbulence. They did not expect any different conditions than what they experienced from the flight down.

The trip was his first trip with the captain, and there was an expectation to share all the information via CRM³². A captain would be expected to bring it up.

He uses the radar when avoiding area of precipitation and activity which was not scheduled along their route of flight. There was a turbulence function on their radar, it's accurate enough but not always perfect. He did not have the turbulence function on for either of their legs.

When describing their onboard weather radar, he stated that they each had an independent function and each pilot could select tilt and range independently of the other pilot.

²⁹ Emergency Medical Technicians

³⁰ System Operational Control center

³¹ Flight Service Station

³² Crew Resource Management

The captain had communicated with the flight attendants before they encountered the turbulence.

Prior to the encounter with the turbulence, air traffic control issued a traffic alert on a company aircraft that was above them; however, they had entered IMC just before that. They had been in VMC for a good portion of the flight but were IMC for a couple of minutes prior to the turbulence. He had no concern for embedded thunderstorms and saw none on the route down to SNA. He further stated that they experienced mountain wave turbulence, but he had not experienced a mountain wave to this extent before.

He received training on mountain waves by Compass Airlines which included how to recognize the possibility and how to handle it. Part of how to handle it was to not fight for the altitude and to ride out the wave. If the autopilot became disengaged do not fight the aircraft and let the aircraft “ride the wave.”

Everything they did on the accident flight was correctly done even when they got the TCAS RA which was a mandatory compliance. During the TCAS RA they were trying to push the airplane into a nose down attitude smoothly; however, it would not descend even though they tried the best they could to get it to descend. It was challenging but he felt they did the “appropriate actions” and handled it as they should, but unfortunately, they had a negative g. They made a PIREP to air traffic control about the turbulence which they classified as severe mountain wave turbulence.

Their procedures said to comply with the TCAS RA until they were clear of the conflict. Once clear, they leveled at FL334 and then climbed back up and reengaged the autopilot.

There was no transfer of controls and he continued as pilot flying until after landing in RNO. He talked to the flight attendants briefly after they encountered the turbulence and the captain made the PIREP. He classified the conversation with the flight attendants as “short.” He started the conversation with an explanation that they had just went through some severe turbulence and asked if the flight attendants and passengers were okay. They said they were okay and did not know if they had any severe injuries. He estimated that the conversation occurred about 30 seconds after the turbulence was encountered. They reported that they had a galley cart in the aisle that was tipped over. He reported that the flight attendants cleared the aisle then assessed the passengers for injuries. A few minutes later they were then informed of the flight attendant and passenger injury.

They ran all the appropriate checklists, made all required communication attempts, and changed their FMS destination for their diversion to RNO by changing the arrival airport. They then ran the normal checklists which included descent and approach. They did not run any non-normal or emergency checklists.

They had divided their duties and he was communicating with air traffic control and getting vectors, while changing the arrival airport to RNO in the FMS, because the captain was talking with dispatch over AIRINC.

He had his three-point seatbelt on, and he had removed his shoulder harness when the flight went to smooth. He was unsure of the captain’s seatbelt.

When asked if prior to departing SNA if they had discussed potential turbulence, he stated that they discussed with the crew as a whole where they had experienced the turbulence on their way down to SNA and they let the flight attendants know that turbulence was expected the first 40 minutes of the flight and the seatbelt sign would stay on. They also wanted to be vigilant about their airspeed and not to get into an overspeed condition. This was a normal discussion for when flying through moderate turbulence. Moderate turbulence was not unusual, but they did not expect to encounter the severe turbulence that they did.

During the turbulence the only control inputs he did was elevator input.

Turbulence training received was classroom training and online training. There was also references to it in their publications.

Guidance from the company on seatbelt sign usage was to make sure that the safety of the passengers would not be compromised. It was at the crew's discretion but if there was any turbulence the seatbelt sign would stay on.

He thought the captain may have informed the passengers of the turbulence before departure, but he could not recall for sure.

There was no one occupying the cockpit jumpseat at the time of the event.

The trip pairing was originally scheduled when the monthly bids were published. The trip itself, he could not recall exactly but thought there was a change of captains.

When asked if he likes to work at Compass, he stated that he loved working for the company and that it had been "pretty good."

He had flown the day prior from SEA to Portland, Oregon, and had been off for two days prior to that so he felt sufficiently rested on the day of the event. The captain and himself had been together for the 2 days and they had flown together from SEA to Portland with no issues. He felt that the captain got along with the flight attendants and passengers.

It was a normal trip pairing for him and was a pretty standard pairing.

He lived in Portland and on the overnight went home and slept in his own bed, so he was not with the crew the night before the event. He had a 0515 duty on and woke up at 0400 the morning of the accident and was at the airport on time for the flight. He thought he had gone to bed about 2100 the night prior to the event and he reported no problem sleeping or staying asleep.

The day prior to the event, 1st day of pairing, February 12, he could not recall what time he woke up. His normal sleep schedule equated to a full 8 hours and he felt his normal range was 7-8 hours of rest. He felt fully rested but could not recall the specific times he had gone to bed or woke up.

He had no issues sleeping and he reported that he was usually "a sound sleeper".

He did not smoke or use tobacco products, prescriptions, medications, nor illicit drugs.

He did drink socially. He was out with a friend and had a few drinks but was not drinking close to the 12-hour mark.

He rated his health as “healthy” and had no complications.

He did not wear glasses, nor did he have any issues with hearing.

He reported that during the preceding 72-hours he did not take any medications that might have affected his performance.

He felt the workload was “normal” during the accident flight, maybe a little extra work because of the turbulence.

There were no issues with the aircraft (noise, vibration) and no issue with seeing the displays. It was “a good aircraft.” There were no issues or glare with seeing the displays.

During the preceding 12 months there had been no changes in his health, finances, nor personnel life.

They did have iPads in the cockpit, but they did not have a GPS function on their iPads and could not do weather updates in flight. For turbulence they relied on their weather package which included SIGMETs, etc. He stated that dispatch could contact them with new PIREPS via ACARS.

He used the turbulence function on the weather radar if there were reports of severe turbulence along the route of flight. He had used it a few times in the past, but since they flew the flight down and they did not have any severe turbulence, he did not use it for the accident flight. The radar and turbulence functions, he thought, were made by Honeywell and that the turbulence display on the screen was recognizable when he saw it, but he could not clearly recall how it was depicted.

When asked what he thought could have prevented this, he stated that everything came together when they encountered the severe mountain wave and the TCAS RA. He felt it was like “lighting striking the same place twice.” They were very cautious; he felt there was always room to improve but he felt they did everything they could.

Communication on the flight from SEA to SNA was giving them ideas of where turbulence was at and when they had changed their altitude, they informed their dispatch, so dispatch was aware. They tried to keep dispatch on the “same page” as they were. On the flight down they tried FL290, FL310, FL330, and FL350; they let dispatch know of the altitude changes and the turbulence, just to keep them informed.

Once they landed in RNO, ARFF³³ met them upon touchdown, a decision which was made locally in case any possible damage, but the crew did not think they had any damage to the airplane. ARFF

³³ Aircraft Rescue and Firefighting

announced over frequency that the airplane looked “normal” upon landing. ARFF followed them to the gate. They, and their dispatcher, contacted Reno operations on the ground, to make sure there was a ramp crew and agent on the ready. As soon as they parked the EMTs came up the jet bridge. The captain had asked everyone to remain seated so the EMTs could assess the injuries.

IOCC³⁴ had the capability to print off graphical weather information but they did not get any in SNA because he thought it was a dot-matrix printer and unable to print the graphics. They only had the text depiction.

During the turbulence encounter, both he and the captain applied pressure on the elevator, he applied pressure to begin with and the captain assisted in the end. They were able to reach the RA box with the FPV. Shortly after they encountered the turbulence everything was a “little hazy being bounced around.”

During the descent he pulled the power to idle. He was focused on the RA and could not recall what the airspeed was doing.

During initial training he recalled being taught the individual functions on the weather radar. In the simulator they used it also in order to see how it worked. The weather radar was not covered in his recent 6-month recurrent.

There were no advisories for precipitation that he recalled.

He had commuted to SEA the night prior to the start of their trip pairing.

The airplane had a turbulence speed which was Mach 0.76 or 270 knots. In the areas of the turbulence they were flying at the turbulence penetration speed and when it smoothed out, he thought he accelerated to Mach 0.77; normally they file for Mach 0.78. He felt they were very diligent.

The weather radar did the job it was intended to do, and it was “pretty good.” There were a lot of different functions of the radar and he felt it was pretty straight forward on how to use it.

They did not have any internet connection when enroute. All the charts were always maintained on their EFBs; however, they were not able to track their position on their EFBs.

The charts required updating and they updated them when it was required; however, the charts were always available on the EFB.

When asked if we forgot to ask anything, he stated that he felt there was nothing that we forgot to ask.

He clarified that updating the charts meant that when a revision came out, they updated them when they were connected to a WIFI signal on the ground. They did not do that on a leg by leg basis, but only when there was an update, otherwise their charts were always available to them off-line.

³⁴ Integrated Operational Control Center

When asked if the captain kept to himself in flight, he stated that the captain did not.

Interview concluded at 0948 PST.

Overview:

Summary ID: [REDACTED]

Title: CAB - Employee Illness/Injury - Turbulence Encounter

Processing:

Date/Time When Event Occurred: Wed, 13 Feb 2019 20:33 Z

Description

Aircraft Configuration:

Tail Number: N613CZ

Flight Information:

Departure Airport, Runway and Gate: KSNA/SNA - 01L/19R - 4

Flight Number: 5763

Scheduled Arrival Airport, Runway and Gate: KSEA/SEA

Landing Airport, Runway and Gate: KRNO/RNO

Narrative:

My crew and I operated flights 5763 on February 13, 2019. Routing SEA-SNA-SEA. On the way down to SNA, the first half of the flight was mostly smooth, with occasional light chop. ATC, Dispatch, and our own experience confirmed this. Further into the flight, rides became light turbulence, occasional moderate chop, and brief pockets of moderate turbulence. Through Dispatch and ATC, we also had knowledge of one severe turbulence PIREP to the southeast of PMD (Palmdale) airport in California. However our route of flight (path and altitude) kept us clear of the affected area. Both Dispatch and ATC confirmed this. Nonetheless we had our flight attendants remain seated for most of the second half of the flight down to SNA. We continued that flight with nothing out of the ordinary. We then turned the airplane in SNA for the flight back to SEA. After boarding was complete, I briefed the passengers concerning the expectation for light to moderate turbulence on the flight back to SEA, with an emphasis on the seatbelt sign. I also briefed the flight attendants to remain seated on our departure until we called them. On climb out of SNA, we experienced light to moderate chop, consistent with our flight into SNA. Per FOM CH 8 guidance on turbulence, I called back to the flight attendants, and instructed them to remain seated until we found smoother air, at which point I would release them to their duties. With nearly every ATC handoff or check in, we requested or received ride reports. Roughly 40 minutes into the flight, the light-moderate chop turned into smooth occasional light chop, which ATC confirmed. We waited a few minutes, agreed with the ride report, then released the flight attendants to cabin service. I did mention to the flight attendants that if the ride deteriorated that they should take their seats and call us, especially since they usually feel the

rough air more aggressively in the cabin, than we do in the flight deck. With the occasional light chop, we left the Seatbelt Sign on. Then at roughly an hour into the flight, my FO and I received a traffic alert from ATC for a company ERJ-175 one thousand feet above us at our twelve o'clock, traveling in the opposite direction. We were both IMC. Seconds later, we hit severe turbulence. In nearly the same moment, we received a TCAS RA command to descend, as the severe turbulence had pushed us upwards towards the traffic. It took both of us on the flight controls to get the aircraft down into the resolution box for the RA response. As soon as we were able, we advised ATC of the turbulence, TCAS RA (and that we complied), and called the flight attendants to determine the status of the passengers, themselves, and the aircraft. We divvied up duties, as we are trained, contacted Company through Arinc, and declared the medical emergency with ATC along with the desire to divert to RNO, as had been agreed upon with Dispatch as our best option. We continued uneventfully to Reno. Upon arrival at the gate in Reno, we finished our duties parking the aircraft, then, as a crew made sure those who needed medical attention were seen immediately by medics. Next, we deplaned the remainder of the passengers. Once everyone was safe and taken care of, my FO and I took an inventory of our ourselves, the two non-injured flight attendants, and the aircraft. While the FO conducted his post flight duties, I contacted Dispatch and the Chief Pilot to update them. To the best of my knowledge we had four reported injuries. Two were passengers who refused treatment. One was a passenger who went to the hospital for what appeared a minor head injury. And one was one of our flight attendants who appeared to have suffered a broken arm. I relayed this information to the company as I received it. I also followed up with Maintenance Control to write up the aircraft for the required sever turbulence encounter inspection. Before leaving the aircraft I ran securing procedures, which included securing the DVDR1 and DVDR2 electronic circuit breakers. Upon leaving the aircraft and airport, my FO and I proceeded directly to Renown Hospital for our required drug and alcohol testing.

Traffic Proximity:**TCAS RA Command:** Descend**TCAS TA:** Yes**TCAS RA:** Yes**Complied with RA Command:** Yes**Weather:****Meteorological Conditions:** IMC**Cause****Illness/Injury Event:****Illness/Injury Event:** Yes

Weather:
Turbulence: Severe
Detection
Aircraft Equipment:
Aircraft Warning/Message System: Yes
Reaction
Flight Crew:
Exercised Captain Emergency Authority: Yes
Declared Emergency with ATC: Yes
Landed in Emergency Condition: Yes
Flight Status after Event:
Diversion-Other Alternate: Yes
Diversion: Yes
Planned Emergency Landing: Yes

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Overview:

Summary ID: [REDACTED]

Title: CAB - Employee Illness/Injury - Turbulence Encounter

Processing:

Date/Time When Event Occurred: Wed, 13 Feb 2019 20:33 Z

Description

Aircraft Configuration:

Tail Number: N613CZ

Aircraft System/Equipment Malfunction:

Other Aircraft System/Equipment Malfunction: Aircraft temporarily difficult to control

Flight Crew Employee Information:

Duty On Time: Wed, 13 Feb 2019 13:15 Z

Primary Duties During Time of Event: Pilot Flying

Flight Information:

Departure Airport, Runway and Gate: KSNA/SNA

Flight Number: 5763

Scheduled Arrival Airport, Runway and Gate: KSEA/SEA

Landing Airport, Runway and Gate: KRNO/RNO

Filed Altitude (MSL): 34000

Illness/Injury Event:

Illness/Injury Event: Yes

Narrative:

Our crew operated Compass flight 5763 on February 13th, 2019, both SEA-SNA and SNA-SEA. On the trip to SNA, the first half of the flight was relatively smooth with intermittent light chop. Reaching the southern part of Northern California, the ride deteriorated into constant light to occasional moderate. The flight attendants were seated for the last half of the flight and we continued normally to SNA for a safe landing. On the return leg, we experienced identical conditions for the first half of the flight in Southern California that we had experienced on the flight down. The ride settled to intermittent light approximately where we started to expect the ride to improve going north, and the flight attendants were released to do cabin service, however the seatbelt sign would remain on and the flight attendants would be seated if the ride worsened. Cruising at FL340, for a while longer, our aircraft was experiencing intermittent light chop, but was mostly smooth. We were then given a traffic advisory by Center for an aircraft crossing 1000 feet above. Both our aircraft and the other E175 above reported IMC and could not make visual contact. While our aircraft were encroaching, we encountered severe turbulence and experienced a sharp increase in vertical speed, which triggered an immediate "descend" RA conflict with the aircraft above. I immediately disconnected the autopilot and pushed the yoke forward, however the severe turbulence prevented me from pitching for the desired FPA resolution box. The captain

helped on the controls with the turbulence fighting against us. As the updraft appeared to subside, the result was a sharp drop. I overrode the power to maintain airspeed until clear of the conflict and returned to our previous altitude as soon as possible. We immediately informed ATC of the RA and severe turbulence, and contacted the flight attendants to check on the status of the cabin. Upon learning the extent of the injuries, we elected to divert to a nearby suitable airport, deciding Reno would be the best option for immediate care for the passengers. A medical emergency was declared, and CFR and medics were on standby. The flight continued uneventfully for a landing in Reno. After securing the aircraft, our first priority became the care of the passengers. We had everyone remain seated until EMTs could board and attend to those who needed care immediately. Once given the okay from the medical personnel that their work wouldn't be disturbed by having people in the aisle, we deplaned the remaining passengers. To the crew's knowledge only two were taken to the hospital, one passenger and one flight attendant. After the passengers were taken care of, we made the necessary phone calls to SOC and the chief pilot, and secured the aircraft. DVDR1 and DVDR2 circuit breakers were secured in the process. We left the aircraft and proceeded to Renown Hospital for a drug and alcohol test, as well as check in on the injured flight attendant.

Phase of Flight:**Flight Phase at Start of Event:** Cruise**Traffic Proximity:****TCAS RA Command:** Descend**TCAS TA:** Yes**TCAS RA:** Yes**Complied with RA Command:** Yes**Weather:****Meteorological Conditions:** IMC**Cause****Illness/Injury Event:****Illness/Injury Event:** Yes**Weather:****Turbulence:** Severe**Detection****Aircraft Equipment:****Aircraft Warning/Message System:** Yes**When Event Detected:****In-Flight:** Yes**Reaction****Action Taken:****Accepted:** Yes**Flight Crew:****Declared Emergency with ATC:** Yes

Landed in Emergency Condition: Yes

Took Evasive Action: Yes

Flight Status after Event:

Diversion-Other Alternate: Yes

Diversion: Yes

Planned Emergency Landing: Yes

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