

# Attachment 1

To Operations Group Factual Report

DCA13FA094

Interview Summaries

**Interview:** Chad Jacob Rabinowicz, First Officer,  
**Represented by:** Jeffrey Small  
**Date/Time:** May 24, 2013, 1400 EDT  
**Location:** via teleconference  
**Present:** Roger Cox-NTSB; Tony James-FAA; Andrew Wills, PDT;  
Rich Sampson, ALPA

During the interview, FO Rabinowicz stated the following:

He was 25 years of age and had been a DHC-8 first officer (FO) at Piedmont (PDT) since he was hired April 4, 2011. Prior to being at Piedmont he was employed as a maintenance planner at Frontier Airlines, and prior to that he had been a student at Purdue University. He held a multi-engine ATP certificate and a DHC8 type rating and he held a commercial certificate for single engine land and sea. He had a first class medical certificate. He wore glasses for near vision and was wearing them during the event. His total flight time was 2000 hours, of which 1700 was in the DHC8. He had logged 239.5 hours of PIC time.

He provided a brief synopsis of the sequence of events during the accident flight beginning with the initial gear extension. During approach to runway 4R at Newark NJ airport (EWR) they lowered the landing gear and the left main landing gear (MLG) showed a red unsafe indication. They continued the approach and made a low pass so that the EWR tower could observe the gear and then flew the missed approach. Tower personnel reported the main gear was partially extended. Using the checklist, they performed an alternate gear extension without success. They pulled the alternate gear handle multiple times and tried using the hand pump. They did another fly-by, retracted and lowered the gear again manually and performed a positive G maneuver to try to lower the left main gear. They conferred with the company maintenance control. After noting a low fuel condition, they voted for landing in a gear up configuration and the company agreed. They briefed the flight attendant, moved passengers, and landed on runway 4L. They evacuated the passengers on the runway.

Checklists used were: 1) illumination of red landing gear unsafe light 2) alternate landing gear extension 3) emergency landing procedures. The captain began reading the checklists but they swapped to the FO doing the checklist when they saw that the actions were on the FO's side of the cockpit. The FO started the checklists over. He had been trained to do an alternate gear extension and this event was the third time he had experienced an alternate gear extension in the airplane.

Asked if he read the entire checklist, including the warnings, cautions and notes, he stated he got distracted because the checklist said "verify three green lights illuminated." The three lights were not there and there was nowhere to go from there. At that point he wasn't sure about reading the rest of the checklist. He was reminded by maintenance control to insert the handle and to pump it. He knew about the possible high force needed on the alternate gear handle but he didn't read it, and he also knew that using the pump handle was a step in the procedure. He turned on the toggle switch in the floor and checked the three gear down lights and saw that only two were illuminated and that the one for the left MLG was not illuminated.

He did not know if PDT recommended foaming the runway for a gear up landing and they did not consider having it done. Air Traffic Control (ATC) knew about their emergency and they trusted the aircraft rescue and firefighting (ARFF) team to use their best judgment about foam.

The landing gear warning horn sounded during the final approach and landing and it was extremely distracting. They kept the speed above the point where it sounded, 130 knots, because it was a “dominating” horn. The extra speed did not affect the landing. The Vref was 88 knots for flaps 35; they flew 130 while on the glide slope and then the captain started to slow when close to the runway.

After stopping, they made an announcement “remain seated.” He discussed the situation with the captain. There was no wind and no fire, but some cockpit smoke was developing. He exited through the left air stair and told the FA (flight attendant - Susan) to take the passengers out that door. He went to the base of the stairs and directed people away from the airplane using a flashlight. They did not have a megaphone. He could not recall if he or the FA used the public address (PA) system. The flat position of the stair was not a problem and in fact helped passengers use care in exiting the airplane. There were no injuries to passengers or crew. The passengers moved to a grass area and he checked with them and no one gave him any indication of injuries.

The passengers went to the terminal in a bus. He and the crew stayed at the aircraft about two hours. They were waiting for company and FAA representatives. They left the area on another bus and went to get drug tested, which was completed between 5 and 6 AM.

When still in the cockpit he had noticed through the window that smoke was rising from under the engines and fuselage. He had no rearward visibility but he noticed wisps of smoke. ARFF used fire extinguishing material and sprayed foam directed at the base of the aircraft. The ARFF personnel arrived at the aircraft within 5 minutes maximum, and he was outside when they arrived.

He began his duty day at 1255 PM at Binghamton (BGM) airport. The accident flight was the 6<sup>th</sup> leg of the day. They had been on duty for about 12 hours at the time of the accident. He felt rested when he reported and felt a little tired at the end of the work day because of the late hour. He did not think any personal issues, including fatigue, affected him.

He described his prior experiences doing alternate gear extensions. At BGM on a DHC8-300 last July they had a hydraulic leak in the nose gear. After taking off on a flight to Harrisburg the gear did not come up. They did an alternate gear extension, landed, conferred with a mechanic, and did a gear down ferry to Harrisburg. On a flight from White Plains (HPN) to Philadelphia (PHL) they got an abnormal gear indication on the MLG after takeoff in a DHC8-100. There were multiple lights illuminated on the gear panel but the gear was retracted. They continued to PHL, did an alternate gear extension, and landed on runway 27L. They thought it was best to continue to the airport with the longer runway.

On the first tower fly-by the tower reported the MLG was “partially extended,” but the exact position of the gear was not determined. He was aware of how much pressure was needed to move the alternate gear handle and the pump. He felt pressure in the pump handle at a detent.

He “really pulled” the alternate gear handle all the way multiple times. He never tried to operate the alternate handle with the normal gear handle in the up position. Once the gear was to the down position in the alternate procedure he was not supposed to put the gear back up in the procedure, but he did so at the direction of maintenance. They cycled the gear up and down. They did a second fly-by and a UAL crew said they could not see whether the door was open. He was flying for both the low passes.

Asked if he noticed any noises or other indications of a gear problem during flight, he said that during the retractions after the initial problem occurred he noticed that the amber left MLG door light stayed on longer than the other lights. The left MLG green light never illuminated. On extension, the right MLG and nose gear green lights illuminated. In pumping the hydraulic gear handle he had not been able to compare the force required with his prior experience because in the past he had never had to use the pump. In each case the alternate extension worked without the pump. In this event, the pump was extremely difficult to move and became hard to move after about two cycles. He stood up by the door in order to operate the pump. ATC was aware that the gear was retracted before they landed. During the evacuation the position of the air stair door caused people to slow down a few seconds and be more careful and this was helpful in his opinion. They did a total of three gear extension attempts and they did pre-brief the FA before landing.

Regarding the decision to land with all gear retracted, they felt it was the best choice. Landing with the nose gear and the right main extended created a balance issue and made it difficult to keep the prop on the gear retracted side from hitting the ground. The airplane could spin and the prop could shatter, puncturing the cabin or a fuel cell. This was a larger risk than landing gear up, which allowed them to keep the wings level. They had not practiced a partial gear extension in the simulator, but he had been trained to understand how the props can shatter and he had seen a video where a Q400 had this happen. He did not recall seeing a PowerPoint presentation on alternate gear extension and landing with partial gear extended.

They asked for guidance from the company about making the gear up landing and they did come back and approve it. The fuel at landing was less than 1000 lbs. and the captain made the landing.

**Interview:** Edward Scott Powers, captain  
**Represented by:** Jeffrey Small  
**Date/Time:** May 24, 2013, 1500 EDT  
**Location:** via teleconference  
**Present:** Roger Cox-NTSB; Tony James-FAA; Andrew Wills, PDT;  
Rich Sampson, ALPA

During the interview, Captain Powers stated the following:

He was 60 years of age and was currently a DHC8 captain at PDT. He had no other duties and had not been a check airman at the airline, although he had such duties when he was in the military. He had already been a captain on the DHC8 at his prior airline, Allegheny, when Allegheny merged with Piedmont. He had been on the DHC8 since the airplanes were first acquired in the 1990 to 1992 time frame, and he was originally hired by Pennsylvania Airlines June 8, 1988. He had remained with the company the entire time, although the name changed from Pennsylvania to Allegheny to Piedmont. In the U.S. Army he flew the OH58, the OH6, the UH1, C12, C21 and C42. His certificates included the ATP with type ratings in the DHC8, SD3, B300 and B1900 and he held a commercial certificate and instrument rating for airplane single engine land and helicopters. He held a class one medical certificate with a limitation requiring glasses for near vision. He wore his glasses during the incident. His total flight time was 28,000 to 29,000 hours and he had about 22,000 hours on the DHC8. All his time was PIC except for about 3000 hours.

He provided a brief synopsis of the sequence of events during the accident flight beginning with the initial gear extension. When they put the gear down there was a red left MLG light. They followed the published emergency procedure and the tower verified that the left MLG was partially extended. They flew a missed approach, did the emergency procedure, which did not work, and contacted the company, who guided them through pumping the gear down on the alternate gear extension procedure. They retracted the gear and both he and Chad, the FO, used the pump to try to extend the gear. He went aft to look at the gear and saw gear doors down. He talked with maintenance control to discuss options and felt they should land gear up. Their decision was finally made when the fuel was 800 lbs. and they landed and evacuated.

Checklists used were: 1) illumination of red landing gear unsafe light 2) alternate landing gear extension (AGE) 3) emergency landing procedures. On the first checklist, the FO was the PF and he, the captain, read the checklist. On the next checklist, the alternate gear extension, he became the PF and the FO ran the checklist. They completed the last checklist, emergency landing, in the normal sequence for landing and he was the PF. He thought the alternate gear extension procedure was good and had the necessary information but could be in a better format. The placement of the warnings disrupted the checklist. The FO did not read the entire checklist the first time they ran it, which was a mistake he later rectified. He then told the captain the checklist was complete.

He was aware the alternate gear forces could be high and that increased airspeed could cause them to be higher. He was also aware of the possible need for use of the pump handle, but it was not on the checklist except "after the fact," and they resolved the need for it. He had previously

done an alternate gear extension (a year ago at BWI) and the gear came down and locked and the system worked “as advertised.” PDT had trained him in the AGE procedure in the simulator. The simulator and the airplane were similar except that there were two bumps in the pump sequence in the airplane whereas in the simulator the pump action was a smooth fluid motion.

He did not think PDT recommended foaming the runway for a gear up landing and he did not consider having it done. He had a long wide runway and had better control doing it the way they did it. He told the FO they would decide which doors to use for evacuation after landing and seeing if there was a fire or other hazard. He told the FO after landing to use the left main cabin door but he did not use the PA or make an evacuation command. He gave the command verbally to the FA. The airplane was not equipped with a megaphone. He turned the battery master switch back on in order to use the radios to notify ATC that they were evacuating. The master had been turned off as part of the emergency landing checklist.

He depowered the electrical system, got a flashlight and went back to check the cabin after everyone left. He encountered a firefighter who had on a full face oxygen mask who completed the cabin check, so the captain then got off the airplane. When the firefighter said the cabin was clear he went to where the passengers were located and verified that everyone was okay. The passengers left in a bus and the crew eventually left in an automobile provided by one of the rescue crew. The crew was at the site for about one hour. They stayed to verify passenger bags were removed and their flight bags and belongings were brought back to the terminal.

After landing he observed smoke initially on the right side moving rapidly up from the bottom of the airplane. He thought the smoke was aluminum oxide ground into particles partly because of the pungent smell. He had learned about this type of smoke during military accident investigations. He queried the passengers three times and no one reported any injuries.

His duty day began in the early afternoon between noon and one o'clock, and they had flown 6 legs that day. He did not feel fatigued, had a good rest at the layover hotel, and was not affected by any personal issues on the day of the accident.

Regarding company training for a partial gear up landing, he thought the subject had been discussed at some point in the past. The case with the nose wheel retracted was fairly controllable, but the worst case was one MLG up and one down due to possible loss of control. He did not recall any formal training on the subject. It was his thinking that with the nose and right MLG extended they would have no nosewheel steering and would rely on rudder, and as soon as the wing dropped the fuselage and wingtip would touch. He would need to use full right brake and reverse on one prop and he was not sure if he could control it. A ground loop was highly probable. With all the gear retracted he expected all the people would be able to walk away.

During the walk-around inspection after landing he was not sure if any of the gear doors were open. He saw doors open in flight but he was not 100% sure of the position of the clamshell doors.

He reiterated that he saw doors open in flight but was not sure of the door position after landing. He walked to the back of the cabin during flight to see if he could see the position of the landing gear using the flashlight. The cabin was dark and there were no reading lights. The UAL flight who observed them during a fly-by said the doors were closed but that conflicted with his observation. He did see the amber doors in transit lights and the left MLG door indication hesitated during each retraction. There were no unusual sounds during the AGE. He felt two “bumps in the road” in the pump handle but he did not try to stop the cycle and did not feel any counter pressure.

He had the FO pump the handle at least 20 times, to the point where he was “worn out.” He also operated the pump handle many times. The red left MLG light remained on.

He could not say why the emergency landing procedure checklist called for the battery master switch to be turned off. He had to turn it back on to make a radio call. On touchdown he shut off both engines before they came to a stop. He didn’t want the props to disintegrate.

The captain stated that the crew did a great job and he appreciated the assistance he got from the tower, ATC, fire, police and the company.