NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

October 1, 2014

Attachment 1 – Interview Summaries

OPERATIONAL FACTORS

DCA14MA081

Contents

A. INTERVIEW SUMMARIES

1.0 Interview: Lynda Flemming , USAirways Airbus A320 First Officer

Date: March 26, 2014
Location: USAirways Training Facility, Charlotte, NC
Time: 0900 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Larry Rooney – USAPA

During the interview, First Officer Flemming stated the following:

Her name was Lynda Walker Flemming, and she was 62 years old. Her title was USAirways First Officer (FO) on the A320 at USAirways, and she was a line holder based in Charlotte, NC (CLT). She was type rated on the A319/320/321. She had been based in CLT since 1988, and

was previously based in Norfolk, VA (ORF). She previously flew the F100. Her date of hire with USAirways was 1973, originally as a flight attendant before transferring over to the flight operations department as a pilot in 1999. She held a first class medical certificate dated December 5, 2013, with the limitation "must wear glasses." She was wearing her glasses during the accident. She was a line holder.

She had never been in the training department at USAirways. She had flown with the captain previously but could not recall when. She said the captain was "great to fly with, just standard, which I like" because she knew what to expect. She could not recall how many times they flew together, and it was all on the Airbus.

Her total time was about 13,000 hours, with about 4,700 hours on the Airbus. Previous to USAirways, she started flying in 1986, and then was a certified flight instructor (CFI) for Piedmont Aviation for a few years before getting on with CCAir (USAirways commuter) in 1990. She was furloughed for a short time, and called back to CCAir in 1991, flying the Jetstream. She was hired by USAirways in 1999.

She was drug and alcohol tested following the accident. The crew was picked up at the airplane and driven to a conference room after about 40 minutes, and given a urine and Breathalyzer screening, and no blood test. She had never failed a drug or alcohol screening before, and had never been treated for drug or alcohol abuse.

She had never been fired, terminated or asked to resign from any employment. She failed one checkride previously when she first came to USAirways. She had just come from the Jetstream at CCAir, which did not have an autopilot, and was transitioning to the F100, which was a "very advanced aircraft." The failure was because she had not properly set the ILS push button. She was retrained and subsequently qualified.

She had just recently picked up her iPad for use at USAirways the day before the interview, so she was not using an iPad during the accident flight.

Recalling the day of the accident, she said they had a late report of 1035 in CLT. She woke up about 0800 and left her home at about 1035. Prior to her report, she did routine stuff before leaving for the airport. The first leg of the 4-day pairing was to Tampa, FL (TPA), and the second leg was to Philadelphia, PA (PHL). The 3rd and final leg of the day was to Fort Lauderdale (FLL). She did not trip improve to fly this pairing, and it was on her originally bid schedule.

There was nothing unusual about the first two legs of the trip, other than it was a little "windy." When they arrived into PHL, they changed airplanes. They were running "pretty much on time," and arrived into PHL a little early into PHL. The weather in PHL was "nice, it was just windy." The flight from PHL-FLL was full, and there were no jumpseaters.

The pushback from the gate was normal, and they had an expected departure clearance time (EDCT) of 1829 local. She thought they may have been a little late on their pushback with another airplane behind them. They began a single-engine taxi around the west side of the

runway. They were sitting near the Sierra intersection number one when they switched to the tower frequency. ATC gave them a sequence of what she remembered as number six. She looked at the time, and the captain said to plan to start the second engine at 1820. At that time they were moved up in the sequence and were number two behind a Southwest Airlines (SWA) B737. They then started the second engine and conducted a flight control check. She started to read the checklist when she got a call from the cabin that a passenger was up in the bathroom. She asked the flight attendant to call when the passenger was out. The flight attendant then told her the passenger was returning to his seat, and they continued the checklist. They taxied slow to complete the checklist. The captain began to move up and they were taxing onto the runway. She said from the point they were told they were number two it was "one thing after another" and it was time compressed. She did not feel rushed, but there was no time to waste.

When they were cleared onto runway 27L, the captain was the pilot flying (PF) and called for the below the line checklist, and they then realized that the wrong runway was in the FMCG. They saw 27R instead of 27L. She changed that to 27L, and they taxied into position on 27L. They were finishing the checklist and the tower immediately cleared them for takeoff, and gave them a 230 initial heading on departure. She started the time clock as the captain brought the power up. As the power was brought up, they got a "ding" and a lower ECAM message that said "thrust not set." She saw the captain adjust the thrust up, and the captain said "the thrust is set."

She looked at the engine indications, and the TLAs were matched and up next to the red line and there was no longer a message on the ECAM. She turned her attention to the airspeed indicator, and saw 120 knots. She then verbalized "I don't have any V-speeds" and then the captain verbalized "I don't have any V-speeds." They both verbalized it. She said they had previously briefed the V-speeds. They then got a "retard, retard" aural that was "really loud, and was more rapid as we continued to accelerate." She said the aural alert was common on landing, but she had never heard it before on takeoff. They had "full power, and airspeed increasing rapidly." The captain asked if there were any ECAM messages, and she said "no, we don't." She thought it must be a spurious audio, and did not think there was anything wrong with the airplane. The captain continued down the runway, and rotated at about 159 or 160 knots, and she thought "something's not right." The airplane seemed to roll to the left, and they were not very high. In a normal takeoff with the wind from the right, the airplane would nose into the wind. She could see the captain struggling with getting the airplane back to where it should be. The captain said "we need to get this thing back on the ground," and she agreed. She had never felt anything like that before and she did not think the airplane would continue to fly. The captain then pulled the power back and they hit hard. There were a number of different impacts after that. The captain kept the airplane on the centerline, then the airplane started veering left of runway centerline as the airplane slowed. It came to a stop on the runway.

She knew what they did after they stopped but did not recall in what order she did it in. She called the tower for the abort on 27L. The captain called for the evacuation checklist. She pulled out the QRH, but did not have her glasses. She could not find her glasses that had come off during the accident, so she got her spare pair out of her suitcase, sat down and read the evacuation checklist. She went through the checklist from "top to bottom," and then smelled smoke while the captain was talking to the tower. She remembered hearing the captain say "stay seated." The cockpit door had come open, and they could hear the flight attendants (FAs) yelling

to the passengers to stay seated. The captain called back again to tell the passengers to stay seated. She continued to smell smoke, and saw the left engine fire indication light was illuminated. The captain pulled and discharged the fire extinguisher to the left engine. They then came out of the cockpit and the FAs had already started evacuating the airplane. The FAs did a great job evacuating the airplane. All passengers were gone from the cabin and she went down the slide. There was emergency equipment and an O2 bottle at the bottom of the slide. The captain came down the slide and they walked away from the airplane. The passengers had already started to gather together and she motioned to a few that were off to the side to come over. She could not believe that the emergency equipment was already there; they were there "so fast." They had to stand out by the airplane for a long time.

The captain was the pilot flying (PF). He verbalized that they would take care of the situation in the air.

The captain conducted the departure briefing while at the gate since he was the PF. It covered the taxi route, alternate routes of taxi, primary route, the altitude, the first fix, and they verified route in the FMC, the squawk and flap setting. They both were involved in the brief, and they both missed that runway 27R was inserted. They did look at the flight plan page to see the runway, and she did not notice it said 27R since they were expecting 27L. Neither one of them noticed that 27R was in the FMC. When she got the weight and balance, she would underline the correct numbers to make sure she was looking at the right ones. They were "so expecting 27L, and she had never taken off on 27R at PHL." They trapped the error on the line items of the checklist before departing when they verified the 27L, but caught that it was 27R. She made the change as they were pulling on the runway, and then they finished the line items.

She originally set flaps 2 for their single engine taxi, and then went to flaps 1 when she got the weight and balance. The checklist also covered the required flap setting to trap any error. To her knowledge, all the checklists were completed prior to departing.

She did not remember when the weight and balance uplink printed up. As the FO, she entered the weight and balance via the uplink. She checked the aircraft number and date and load, and checked the center of gravity (cg) to see that they were correct. She could not remember if she uplinked the takeoff data, or entered the V-speeds and assumed temperature manually. If the takeoff data uplinks or if she entered it manually, she would verify the numbers with the weight and balance. She would also underline certain items on the weight and balance for emphasis, like the runway and flap setting. She was surprised she did not catch the runway at that point. She could not recall what the V-speeds or assumed temperature were for the departure. The taxi checklist covered reviewing the V-speeds.

She did not feel rushed, but time compressed, and felt they had no time to waste. If she had thought they were rushed, she would have said something and had done that in the past with no hesitation, but did not feel it this time. She was busy, but did not have any indication that she was missing something.

Normally she would be on the perf page for departure, but she had to go to the flight plan page to change the runway. It was not unusual to get a runway change, and they normally got that from

ground control. She said once the runway was changed, you would have to put new V-speeds and assumed temperature numbers in; green dot and descent speeds stayed in and acceleration height defaulted to 1000 or 1500 feet. She did not put in a new acceleration altitude. She "had not not put the numbers in" before. Normally a runway change was caught at an earlier time. She had been trained on how to change runways in the FMC, and said "I think it was time compressed" which was why she did not put the numbers in. To change the runway, you would hit the flight plan page, line 1L for a choice of runways, and then change to the correct runway. You would then look at the flight plan page and the runway display on the Nav display. She did not believe that the takeoff speeds were uplinked. The FO was responsible for making changes in the FMC during taxi so the captain could concentrate on taxiing. As FO she was dividing her duties to help the captain.

She could not remember if they received the "Check TO Data" message, and said "we should have gotten one." They should have gotten the message because the takeoff numbers where not entered in the FMC. The message would come up on the MCDU, and there was no aural alert when the message came up. She had seen that message before and checked the data. She said if she had realized that at that point they had that message, she would have told the captain they needed a few minutes.

On takeoff roll, she noticed she had no V-speeds when the airplane was between 120 and 140 knots. It was after they received the thrust not set message when she looked at the airspeed indicator and realized she had no V-speeds. At that point it would have been a high speed reject. She would check the assumed temperature on the FMA, with flex temp, and it should say "MAN FLEX" with the flex temperature, but she could not recall if she saw that. That was something she would normally do to make sure that they had everything entered.

She had never had a situation where she took off without V-speeds. When asked if there was a procedure to takeoff without any V-speeds displayed on the PFD, she said she had never seen that before in either training or line flying. She was not aware if there was a procedure or guidance to address that situation. They were above 80 knots, they had just briefed the speeds, and the captain said he was going to continue, so she assumed that the captain remembered the V-speeds. She verbalized that she did not have V-speeds as soon as she noticed it. She was not aware of anything that recommended rejecting or continuing a takeoff when there were no V-speeds.

She thought the captain had left the thrust at "full up" and did not remember if he brought them back to Flex. TLA was at the red line. She then said he initially set them to Flex. He moved the thrust lever forward when she called thrust not set from the lower ECAM. There was no aural alert, but there was a chime, and she read the message. She briefly saw the captain move the thrust lever, but did not see him move it backwards. When asked what the procedure was for the thrust not set alert, she said it was to bring the thrust lever to TOGA, but they were doing a Flex takeoff. They did not have a flex temperature in, but she was not aware of that. She thought that the captain went to TOGA, but did not see if the captain set TOGA since it all happened quickly and she was looking at the engine indications. TLA was up against the red line and were matched. She looked at the lower ECAM and the message was gone. She then looked at the airspeed indicator.

The speeds they previously briefed for the takeoff would have been for 27R, and added that 27L was a longer runway. When asked if the captain briefed her on what speeds he would use without V-speeds displayed or what he would look at, she said she did not know what his procedures were. A brief on the V-speeds was on the checklist, and the captain would verify it after she verbalized it. She said she was not looking at V-speeds during the captain's brief, and did not know what the captain would be looking at as she read the checklist. When asked what her expectations were as PM for callouts if there were no V-speeds displayed, she said she would monitor and announce anything where it was not supposed to be. There were no other callouts that she made for the takeoff. Absent the V-speeds on the takeoff roll, she could not call V1 or Vr. She said she "assumed he wouldn't continue to takeoff if he did not know the V-speeds." The captain said "we'll continue and take care of it in the air." She remembered him asking if there were any other alerts. She said she could not recall if she said "ok" or what.

They started to get the "retard" aural alert during the takeoff and she did not call any V-speeds since they were distracted with the aural retard alert. She was trying to figure out if anything was wrong with the airplane; she could not see anything that was wrong. They were accelerating rapidly and everything looked normal except for the audio retard. She had never encountered that scenario before. She said the TLAs were up near the red line. She was not certain if the captain pushed the power levers forward, but remembered them returning to their original position of Flex. She never saw him move the levers backwards. She did not know why the "retard" aural alert was going off, and said it was increasing in frequency until rotation. She said it was common to hear that on landing, but not takeoff. She was not sure when you got that alert during landing but it was telling you to pull thrust back. It could happen if you did not pull back thrust quickly enough and you silenced it by bring back thrust. She was not sure if there was a way to silence the retard aural alert on takeoff.

When asked about reject criteria taught at USAirways, she said prior to 80 knots, it was pretty much for anything, and after 80 up to V1, it was for red ECAM messages or if the aircraft was not safe to fly. The closer you got to V1, the more encouragement there was to go for takeoff. FOs cannot execute a reject, and it was the captain's decision to reject. Her job was to call out any abnormalities and it was the captain's job to call for the reject. The thrust not set came on prior to 80 knots after the thrust was brought up. It was taken care of pretty readily when the captain brought the thrust levers up. She looked at the N1 gauges and the ECAM message was gone. She then looked at the airspeed indicator and the airspeed was 120 knots; maybe the speed came up fast since it was a little windy that day. She did not see where the thrust went up to. She saw him starting to bring up the thrust up then looked at the ECAM. She said she was not aware of a procedure for the FO to run the thrust up to TOGA.

When asked if an FO could assume control for safety purposes, she said yes, if a captain misses a call especially on a landing, or if incapacitated and not responding. She clarified that she would not take over for any call that was missed, but if a critical call was missed she would look over and if the captain did not respond or looked catatonic, she would take over. They trained for that on landings, and the instructors would try to surprise the FO with the captain being incapacitated. She could not remember if she had been trained on that during a takeoff.

She said before they got airborne, "everything was normal until we rotated," and it was hard to describe, but "it did not seem like it was going to stay in the air" and she could see the captain putting inputs in. It was kind of wobbling and the airplane had kind of a left rolling moment. She had never felt that before. She did not know if the airplane was responding to the captain's inputs; it was not responding as it should. The airspeed they rotated at was about 159 or 160, but she was not sure of their airspeed once in the air since it happened fast. It was the captain's decision to go or no go, and she said there was nothing indicating that they should reject according to their guidance. "Everything looked normal except that audio" and it was very distracting and very loud.

During the evacuation, the captain talked to the tower, and asked if they saw any smoke, and they said it was smoking. All evacuation checklists were accomplished. They both got out the QRH and each person read their own portion for their respective duties. The captain was responsible for setting the parking brake and then shutting down the engines. Typically the engines were shut down with the switches. The captain had other evacuation duties. He talked to the tower to see if they saw any smoke. They said yes, and he asked if it was bad, and the tower said yes. She said they did not want to evacuate if they did not have to, so they took a minute to assess to see if it was necessary. People can get hurt during an evacuation.

When asked if she felt like they should have rejected the takeoff, her feeling was that she wanted to, but did not see any indication requiring a reject. She was sure there was a report required to be filed for a reject, but was not sure what it was, and added "that's the captain's responsibility." She thought maybe an event report and ASAP report.

The nose gear collapsing after landing was obvious, and it was a hard impact. She said there were several impacts, and was not sure on which one that the nose gear collapsed. The captain was the one who called for the evacuation using the PA system after they found out the tower said the smoke was bad. The PA system was working fine. There were no other communications with the flight attendants.

PHL was a common place for her to fly to; she flew there quite often. Her PIC time was 1,400 hours, and it was all at the commuter.

They did have an avoidance bid system, but she would never have done that with this captain since he was a great guy to fly with.

The only maintenance issue with the airplane was a minor toilet seat issue. There were no MELs.

She had no issues with the captain's flying abilities, he was very thorough and did everything according to procedures, and was a good guy to fly with. It was a very comfortable cockpit with open communication. His mood was very soft spoken, and he seemed to be in a good mode and did not seem distracted. She did not notice him yawning or hear him say he was tired. She said the captain told her he was planning on going home for the FLL overnight.

She said their crew resource management (CRM) training was pretty intuitive, but could not think of the specifics now. It involved being aware of what the other person was doing, backing

each other up, and using all your resources and working as a team. They were also trained on threat and error management (TEM), and received that training with every recurrent. Her last recurrent was in either April or May.

On Monday the 10th, she was having flooring put in at her home. She had an electrician in and a landscape designer at the house, and pretty much stayed at home, and may have run some errands. She said it was a normal day. She did not recall when she woke up that day but said the work was starting about 0900 so she probably woke up around 0800. She could not remember when she went to bed, but generally it was around 2230-2300. Sometimes she watched TV in bed. When she would go to sleep changed, and it really depended on the day. On Tuesday and Wednesday, she awoke and went to bed about the same times as on Monday and her activities were also the same.

On Thursday, she woke up around 0800. She actually left for the airport around 0930 for the 1030 report time. It was a short drive to the airport, about 20-25 minutes. Her natural wakeup time was around 0800. She felt rested, including on Thursday the 13th; she "felt rested, felt great."

There was nothing unusual about the scheduled 4-day trip pairing. For this type of trip, she would generally log on to the commuter to check if there was a better trip a couple of days ahead of the trip, but not in this case since "this was a good trip." She thought the previous trip she was on came in Saturday or Sunday before the accident flight, and may have been one she split off on. She brought lunch with her for the trip which she ate at the gate in TPA, but they also had a crew meal for the FLL leg. She did not know if the captain ate lunch.

She had no previous accidents or incidents, and had never experienced any emergencies. In the previous 12 months, she had no changes in health, family, financials, and no drama and was in good health, and her kids were great. She said her health was very good. She had an eye exam about 6 months ago, with a slight change to her prescription, and no color vision issues or hearing issues. She took a prescribed medicine Extrace of 1 mg, and she thought it was listed on her medical. It was a daily dose with no side effects, and she took it on the morning of accident. She might have had a glass of wine the night before, and did not use tobacco products or take any illicit drugs, but did take daily vitamins. She did not take any medication, prescription or nonprescription in the 72 hours before the accident that might have affected her performance on the day of the accident. She had no concerns about working for USAirways, and was looking forward to the merger.

She had no pressures that day to get out on time from the company or in her personal life, and had no issues with the FAs; they were a great crew.

She would rate the captain's proficiency as very good, and said he did a great job. She did not remember having any problems with the captain. She said his greatest strength was his resource management, and he fostered a good atmosphere in the cockpit and had a good attitude. There were no areas where he could do better, and she had never heard any complaints about the captain.

She had not learned about any additional training being scheduled for her yet.

She said she was managing her home project on her own, and was sleeping in her own room during the remodeling, which was a gradual process.

When they arrived in PHL to gate C21, they changed airplanes, and the accident airplane was located on gate B8. She did not feel rushed to get to the new airplane, and she did not walk to the accident airplane with the captain. The airplane was there when she arrived, and the paperwork was already in the cockpit and she did her flows and started on her duties. Normally the pilot flying (captain for the accident flight) would load the box, but the captain was dealing with maintenance personnel and the dispatcher after her walk-around, and so she entered the information for him. That was where she believed the runway 27R was entered. They verified the route verification, but the wrong runway was not trapped there. Normally, whoever loads the box reads the numbers and would hold the paperwork, but she did not remember how they did it that day.

When they started the second engine, she would hit the time for the engine warm-up, but she did not hit the time here since they were so busy at that time. She went straight from starting the engine, to her flows, to the checklist, the FA called, and then they were doing the line items. She was not sure if they got the 3 minute warm up on the second engine before takeoff.

As soon as they finished the taxi checklist, the captain called for the line items, and she was not sure if they crossed the threshold during that time but they had been cleared into position. That was where they trapped the error of the wrong runway.

They did finish the rest of the checklist. She honestly did not think about putting the new numbers in, but did not do it, and she was not sure what MCDU page she was on when they took off. She thought if she went back to the perf page that she would have seen that the numbers were not there.

There were no issues on the previous two legs.

She would not have been surprised if the captain had elected to reject the takeoff but there was no indication that there was something wrong with the airplane, and the only indication was the retard aural alert. She did not call out any V-speeds during the takeoff roll because she did not have V-speeds, and was not sure what he was using for rotation speed. She said “I just wanted that retard to shut up.” They did not get very far off the ground, maybe 30 feet. She felt the airplane contact the ground, thought it was just the mains, but she was not sure where in the process that occurred. She was surprised with how hard the contact was. The nose did not look like it was at a high pitch up. They had a lot of runway left because they accelerated so fast. She did not make the 80 knot call out during the landing because things were happening. When they came to a stop, she called the tower.

During the evacuation, she ran her checklist items, and was not sure if the captain had run through all of his.

She read the taxi checklist and the captain was giving the proper responses. For the taxi checklist, she would have read the V-speeds from the weight and balance or the TO data, including the temperature. She was not sure what the captain would be responding to when she read the V-speeds or what he would be looking at. He would not be looking at the paperwork so he would be looking at the numbers in the box. The process was to double check that they had the V-speeds in the box, and in this case the numbers would have been for 27R if they were automatically uplinked. There was no other place to verify the runway prior to the line items. The runway was verified on the below the line, but not the speeds.

She said it was the captain's decision to make the reject. When she was the flying pilot, she would throw the thrust up, but the captain would always have his hands on the thrust levers during the takeoff. Her callouts for a reject include autobrakes, 80 knots, would make sure the speed was coming back, and to call the tower. The captain would call for a reject even on her own takeoffs by calling "reject" and "my aircraft."

She said the lack of V-speeds did not have anything to do with her thought that the airplane would not fly. There was nothing to indicate that the airplane would not fly until rotation.

During the landing, she could not make the 80 knots call out. She did not make the 80 knot call on takeoff because by the time she looked at the airspeed indicator they were above 80 knots. The only alert prior to 80 knots was the chime for thrust not set, but she was not sure at what airspeed it occurred. The winds were high, so they accelerated fast.

She had never had to call for a go-around when the captain was flying. She said she had the authority to call a go-around and had gone around herself. She would call out abnormalities on the takeoff. If she did not see a response from the captain, she would assume he was incapacitated and execute a go-around since you did not have a lot of time. If she saw that they were on a takeoff and going to run into an aircraft or something of that nature, she would reject the takeoff if necessary. If she was the pilot flying, it was still the captain's decision to call and execute the reject.

She had previously filed an ASAP report "here and there." She thought it was a great program. She was looking forward to the merger.

She did not have any suggestions for crews in the same situation, and said "nothing we did would have made the airplane not fly." She added that she did have some distractions, and she wished that she had put the takeoff numbers in the box.

Interview concluded at 1115.

(First Officer accompanied the Ops Group in the A320 simulator at 1430)

While sitting in the A320 simulator, she said she did not recall seeing the "Takeoff data not set" message after she changed the runway in the FMC on the accident flight. She recalled that they did a "rolling" takeoff, but said she was not sure since "I was really busy." She did not remember seeing the thrust levers at Flex, but did see the TLA targets near the red line of the gauge. While

in the simulator and looking at the gauges, she said there was a possibility that they were not all the way to the red line, but the thrust and TLAs did match. When she heard the aural "retard" alert in the simulator, she said on the accident flight it seemed louder and more frequent. She thought the ECAM message for engines not set was on the lower ECAM and did not recall the action items in blue below the message. She said she would have also pulled out the QRH to determine if that was an ECAM exception.

2.0 Interview: Dav Powell, USAirways Airbus A320 Captain

Date: March 26, 2014
Location: USAirways Training Facility, Charlotte, NC
Time: 1210 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Larry Rooney – USAPA

During the interview, Captain Powell stated the following:

His name was John Davis Powell (Dav), and he was 61 years old. His title was Airbus captain at USAirways, and he was based in CLT since 2009. He had been on the Airbus since 2007, and all his time on the Airbus was PIC time. Previously he had been a B757/767 FO before becoming an Airbus captain. He started as a B737 FO, then went to B757as a FO, then became an Airbus captain, then was a B757 FO before becoming an Airbus captain again. He held a first class medical certificate with a special issuance related to a previous bypass surgery in February 2011. He was required to have annual follow-up stress tests, and his last test was on Tuesday before the accident. He had no other limitations on his medical.

His date of hire with the airline was March 1986, and he was a line holder. The accident pairing was on his original line of flying, and typical for what he flew. He liked the pairing because he lived in Ft. Lauderdale and the pairing had a FLL layover. He had never been a check airman or in the training department at USAirways. His background was all civilian flying, was initially a flight instructor before flying for commuters for 5 and a half years and then getting hired by Piedmont.

He had flown with the accident First Officer before, but was not sure how long ago. He said she was thorough, and did a good job. He had never had a non-normal or emergency with her. His total pilot time was about 23,800 hours flight time, with about 7,500 hours as PIC. His total time on the Airbus was about 4,500 hours.

He was given drug and alcohol screening after the accident downstairs at the PHL airport about an hour after the accident. He had never failed a drug or alcohol screening, had never been treated for drug or alcohol abuse, and had never been fired, terminated or asked to resign from any employment. He also did not have any disciplinary events and had not failed any checkrides. He was not using an iPad during the accident flight because he only picked it up the Monday before the interview.

He woke up about 0445 on the morning of the accident, left his home for the airport at 0515 for the 25 minute drive to FLL, and caught a 0630 flight to CLT. He got into CLT at 0830, and signed in for his 1035 trip at about 0930. His commute to CLT was uneventful, and he napped on the way up in a good exit row seat.

While in CLT, he saw his chief pilot before getting on the airplane, and asked him about how he would find out what flights had crew meals on them, met the FO on the aircraft, and flew the CLT-TPA leg as PF. After an hour turn in TPA, the FO flew the leg back to PHL, and made a great landing in PHL. They switched aircraft in PHL, got everything ready, and had the accident departing PHL. That was when the drug testing and anxiety started happening.

The trip was a 4-day trip, and the accident occurred on day one. He was planning on going home during the overnight in FLL. They were supposed to get in to FLL about 2030. He was not sure when the departure was the next day.

In PHL, he got the paperwork from the gate agent before heading down to the airplane. He took the paperwork down to the airplane and set it on the pedestal in the cockpit. The aircraft had no MELs, and one write up for the aft lavatory toilet seat; that was taken care of and cleared. There was nothing out of the ordinary on the previous flights or regarding the weather in PHL, other than it was a little windy. It was VFR, winds were about 300 at 20 with gusts to 29, and the temperature was about 34°. There were no jumpseaters, and he was the pilot flying.

He conducted the departure briefing prior to the pushback from the gate in PHL. When briefing, he used the printed release, and also verified it with the FMC. The pilot that loaded the information in the FMC looked at the paperwork. That was the route verification. The FO loaded the FMC. They reviewed the routing off the release, and he briefed the FO on the taxi out, departure route, and first fix. He remembered that he saw runway 27 in the FMC, but was not sure if it was right or left. It was a procedure to brief the departure runway. The first fix on the routing in the FMC was TEBEE, and for their planned routing was supposed to be OOD, so he fixed that. It gave them a route discontinuity, and he cleared that, and the routing was set up perfectly except for the correct runway. He used the displays and flight plan page to do the brief. That was the procedure.

There was nothing unusual about the taxi out, and they conducted a single engine taxi since they had the EDCT for departure. He said the FO put the flight plan in the FMC since he was talking to the dispatcher. They started their taxi with flaps 2 since that was initially on their TPS, and the FO changed to flaps 1 when they received the weight and balance. He thought they got the weight and balance during the pushback in the alley near B6 in PHL. The A320 does have uplink capability, and they verify the data that got uplinked through the taxi checklist. They talked about the V-speeds, the assumed temperature and aircraft weight, and that was all done above the line in the checklist. They accomplished that part of the checklist. He did not remember if the FO uplinked the speeds of if she entered them manually, but if she entered them they were likely speeds for 27L. He said the speed for V2 was roughly 159 knots, and the V1,Vr and V2 speeds may have been 152 154 159, but Vr might have been closer to V2. When they conducted the taxi checklist and verified the speeds, he looked at V1 on the PFD, Vr on the perf page, V2 on the

speed tape, and the flex temperature on the upper ECAM, and repeated what he saw in response to the checklist. He said the flex temperature was not on the FMA.

They got the call from the flight attendant prior to departure, and he let the FO handle that. They completed the taxi checklist to the line. The FO had made her PA to the FAs to be seated when they got the call from the FA about a passenger in the bathroom and before the call was over, the passenger was sitting back down.

They were on Sierra short of November, and he advised the FO they would start the second engine at 1820, but the tower moved them up in the rotation, and they were number two when they started the second engine.

He told the FO that she needed to change the runway, and while they were in that process tower told them to lineup and wait. He did not tell the tower that they were not ready, and even though they were time compressed, the FO was not way behind. Changing runways was not uncommon, but it was uncommon to have the wrong runway loaded. It was not something ordinary for them, but most of the other times they would have plenty of time. He said they were anticipating 27L and briefed 27L, and did not catch it until the checklist. He could not recall if he had ever been taking the runway before when he noticed that the FMC had a wrong runway.

He knew the process to change runways in the FMC, and he assumed it was all loaded when they got ready to depart. He checked to make sure the PFD said 27L, which it did. He did not look at the V-speeds. The numbers should have been displayed on the left of the speed tape of the PFD, but he did not see that they were not there until the takeoff roll.

They were cleared for takeoff, and he set the thrust to Flex, and was not sure at what speed, but they got a chime. He asked the FO what it was, and she said "thrust not set." He told her "the thrust is set" and he moved the levers slightly forward then back to the detent, to make sure they were in the detent. He verified that the thrust was set by looking at the TLAs to see they were set. TLAs were to the red line. Shortly after that, they started getting a "retard, retard" aural at about 120-140 knots. He told the FO that they would handle it in the air.

He rotated at about 159 knots. When mains came off, "I felt like the airplane was totally unsafe to fly." Everything was normal except the chime and "retard retard." The airplane tracked down the runway normally. When he rotated, the mains came off the ground fine and the initial pitch felt fine.

When the mains came off, he felt like he was no longer in control of the airplane and his inputs were not responding, and told the FO that they need to get back on the ground. He said if they continued, the result was going to be "catastrophic." He retarded the throttles and did not expect it to be so hard. He thought they only bounced once but was later told they bounced several times.

When asked if he saw an assumed temperature displayed on the FMA when they began the takeoff roll, he said he did not look to see if there was one since they had just reviewed that. In

his mind he thought that everything was set, and "great job, you trapped the error, here we go to FLL."

When asked if there was a procedure to takeoff without V-speeds, he said there was a procedure about rejected takeoff, below 80 knots for any reason, and above the 80 knots more toward the go decision rapidly. Above 80 knots, a rejected takeoff was limited to engine fire or failure, or if the airplane was unsafe to fly. They were well above 80 knots when the speeds and retard message occurred, and he already knew the numbers from their previous brief so he did not see any point in rejecting for that.

He initially moved the thrust levers to Flex, and said that if the thrust levers were not in the detent, "it was going to ding on you." When they got the chime that said thrust not set, he assumed that was telling him the thrust was not set, and thought it was not in the detent so he verified it with the gauges. He was not aware of any procedure to takeoff with the "thrust not set" ECAM message. He had never heard a "retard" on takeoff, only knew of it on landing, and did not know what it was telling him, but if you took it literally he guessed it meant to retard the thrust. He said he was not going to reject over an aural "retard" because procedurally they were at high speed. He was not going to reject for that and they had no red warning lights. There was nothing to suggest a reject. He had never heard a "retard" aural alert on takeoff before, just on landing.

He had only done a reject in the simulator, usually associated with an engine fire above 80 knots but prior to V1. He trained on rejects above 80 and prior to V1, but never had to execute one on the line. When he did the rejects in the simulator, it always ended up being fine. They had MAX set on the autobrakes in case of a reject.

When asked why he did not push the thrust to TOGA after he received the thrust not set chime, he said it was "no harm," and the reason he did not reject was because they briefed a Flex takeoff and he did not know the speeds and assumed temperature had dropped out. The N1 gauges were pretty much at the TOGA setting anyway, and the assumed temperature was not that far off from what the TOGA position would have been. The performance and acceleration of the airplane on the takeoff roll "was spot on." He had no reason to think TOGA would have made a big difference. Once airborne, the wings rolled a little, he was not really controlling pitch that much, and he had not felt anything like that before. He did not feel in control of the airplane and if he continued, he thought it would only be a matter of time before they would be back on the ground, and not the way he wanted to be on the ground.

He did not think the alerts and chime influenced his thoughts that the airplane did not feel like it would fly. He was making inputs but not getting results that would be normal for flying. They did not try and silence the retard message after it came on. When asked if he rotated with the "retard" aural alert, he said he could not remember when the aural alert stopped.

When asked about the procedures for a reject, he said the captain always commanded it, and performed a reject. He did not consider a need to reject for this takeoff.

When asked if there were any required reports for a reject, he thought you would have to file an ASAP report. They also had event reports. There were criteria for filing those types of reports, but he could not remember what they were. He thought a reject at high speed would be a required event report. He thought he had filed an event report a long time ago but he could not remember what it was for. He did not know where those reports were sent to, flight ops or safety. He said event report summaries were included in safety pamphlets that were put in pilots' mailboxes.

When they came to a stop, he picked up the handset for the PA, stated this was the captain, and to remain seated. He tried to assess what happened, smelled smoke, and saw that number one fire switch was illuminated. He heard the tower call their flight number, and tower asked if they wanted the emergency equipment; he said yes. He asked the tower if they saw smoke, and they said yes, so he fired the agent, then shut down the engines, called for the evacuation checklist and evacuated the airplane. They were aware that they lost the nose gear when it happened. He thought they slid about 2000 feet down the runway, slid to the left and one engine was off to the side.

He only fired the one bottle in the left engine while talking to tower. The evacuation checklist was a read and do. The FO was getting her glasses so he ran the checklist including the FO items at the top.

He woke up on Monday, March 10, around 0700 for a 0900 dental appointment, then rode his bike. His activities the rest of the day were normal. He went to bed relatively early since he had to go to the cardiologist the next day, and went to bed about 2200-2230. He turned on the TV, then went to sleep, and slept well. He said he falls asleep really quickly.

On Tuesday, March 11, he woke up about 0630-0700 , had a doctor's appointment that day, and was done by 1330. He then went and ate lunch at Sweet Tomatoes. He was not sure when he went to bed that night, but thought about 2230.

On Wednesday, March 12, he was happy and relieved because he knew the FAA would give him another year to fly. He did not do much that day. He went to bed early because he had to be up early. He probably went to bed about 2100-2130. He had no problems sleeping. He was pretty fortunate in that regard.

He felt fine when he woke up on Thursday, March 13. The flight from FLL to CLT was about 2 hours so he thought he napped about 90 minutes. He had his crew meal ready to go on 1702 but never got a chance to eat it, and had previously had something to eat in TPA. He thought the FO ate in TPA also. He had a cup of coffee in CLT before starting the trip, and only drank water after that. He did not have any plans in FLL once he went home; he was just going to go home and chill out.

There was nothing unusual about the trip pairing. He said the trip was going along perfectly until the accident. Prior to the accident he was off about a week. He thought he had a lead in trip at the beginning of the month.

He never had any other accidents, incidents, and no real "atta-boys." He did receive a 25 year plaque from the company. He did not recall when he flew with the FO previously. He had previous abnormals before, including an engine shutdown on the B757, but it was a long time ago and was uneventful.

He had no major changes in his health, personal life or financials, and actually since the merger his financials were better. He would rate his health as in great shape, and he felt great. He had no vision or hearing problems. When asked what prescriptions he was on, he gave the NTSB a list of his medicines. He took no other medicines, and did not take vitamins. He only drank alcohol socially, and may have had a beer the night before the accident. He did not smoke tobacco, and took no illicit drugs. He took no medicine, prescription or nonprescription, in the 72 hours prior to the accident that would have affected his performance, and had no side effects from the medicines he did take.

He said when they got moved up to number 2 in line prior to departure, there was more pressure on the FO as she was a lot busier than he was. During that time, he said "I'm sort of the supervisor."

When asked if he felt any pressure to depart, he said "I always ask my FOs prior to departure 'are you ready.'" He liked to start the time to monitor how far into the flight they were.

He liked working for the company, and had no concerns about working for the company; they always stood by him. There were no external pressures from the company or his personal life in general. On the day of the accident, he was happy and not tired. The FO seemed fine as well, she seemed alert and she was very thorough. He had no issues with the FO, and she got along with everyone. There were no issues with the FAs; they got along with them. He said "those flight attendants did a really good job." He was the one who called for the evacuation.

He would rate the FO's proficiency as a pilot as "good." She did a great landing in PHL, which impressed him, and her ability seemed great and she always made her callouts. Her greatest strength was that she was thorough. He could not think of any areas for her to improve on, and never heard anyone complain about her.

He thought that they had an avoidance bid system, but he did not use it.

He said USAirways had an ongoing CRM training program for several years. When asked what CRM was, he said "you see anything you don't like, bring it up." He had an open cockpit. On the first day of a trip, he would tell the FO how he would operate, and to operate like how they were trained, and to bring up issues that concern them and they would try to resolve them. They also got trained on TEM, like on the errors they trapped at the end of the runway in PHL. He thought there was always room to improve the training received but could not think of anything specific to improve at that moment.

He was not sure about any plans for additional training following the accident, and thought he may be required to come back for some additional training.

He did a briefing with the whole crew. He did not know the flight attendants but the FO knew the lead FA. The aircraft swap in PHL was not rushed even though they changed concourses. He went straight to the airplane and was the first one to the airplane. He got the papers from the agent and brought them to the cockpit. He saw the FO that was getting off the airplane and he was the one who told him about the lav write-up and that he had called maintenance. The accident FO was not there. He knew about the EDCT time for their departure from PHL right away. He could not remember if he was on the phone with the dispatcher when the FO got to the airplane. He said the FO loaded the FMC even though it was supposed to be his leg, to help him out. He loaded it his leg out of CLT, but on this leg the FO did it since she probably saw that he was busy and helped out.

They did the route verification together, but did not notice the wrong runway. After they pushed and he called for flaps 2, the FO said "flaps 1" which may have meant that she already had the weight and balance. The schedule departure was 1750, and they pushed about 5 minutes late. It was probably 1812 when he told her they would start the 2nd engine at 1820. About the same time they were then told they were to follow SWA, and he told her to start the 2nd engine. The whole process ended about 1816, and we were into position about 1820.

The taxi checklist, flight control check and below the line portion of the checklist occurred prior to them taking the runway. He knew this because the FO had told the FAs to sit down already and that was part of the line items. The ding from the flight attendants for the passenger standing up happened prior to taking the runway. They were still on the hold short side of the runway when this occurred. The FO may have been changing the FMC as they crossed the hold short line.

He did not feel any pressure to keep going when he was in position one, and was not pressured that they would have to get out of line. He was able to watch what the FO did. It seemed like the FO was on pace with what they were doing so there was no need to delay. They did not do a rolling takeoff, and had stopped on the runway. He was not sure what point during the takeoff roll when he first noticed that they did not have the speeds. He verbalized that 159 knots was the speed he would use. He did not put anything on the FCU. He did not really look at the FMA when the aural alert sounded and the FO said thrust not set, and he looked at the engine indications. He heard the chime, then the FO said what the chime was. He could not recall what his response was required to be with the thrust not set chime or what he had been trained on when receiving a thrust not set ECAM.

He said the rotation rate about 2.5 to 3 degrees per second, and everything was "spot on." He said "everything was normal until it was in the air;" then it was a "game changer." All the inputs he was putting "didn't seem to be happening."

He had not received training for aborting a takeoff after they were in the air. He never did a RTO after V1, and said "that is insane, but if you had been sitting where I was, and we kept going higher, this was going to be really, really bad." He felt like they were going to crash, and had plenty of runway, and said "believe me, I would have much rather continued." He thought the mains hit first, and did not know that the tail struck the ground, until a mechanic or fire fighter told him they had a tailstrike. He asked the tower about the smoke since he smelled smoke and

he looked around and saw the fire switch illuminated. He spoke with ATC, and they confirmed the smoke after he saw the fire handle. He saw the FO get up to get her glasses, and then began to do her checklist.

He never had a last minute need to change the runway in the FMC like this one. He fired one bottle into the number one engine, and no bottles into the number two engine. He only pushed one fire button.

When asked what the PM duties were for the FO, he typically would say Flex and she would say Flex, then 80 knots, and then V1 and Vr and rotate, positive rate then gear up. The FO did not get the 80 knots call since she was distracted by the chime and the ECAM message. He told her after the chime that he would use 159 knots for rotation, and they would handle the retard aural alert in the air. He said the reject guidelines were guidance. He said his comfort level would be what they were trained, and he felt comfortable flying the Airbus. This situation was not something he would reject over since they just briefed the V-speeds, there were no red warnings for the retard, and everything seemed normal. He just thought some weird thing happened. Red warnings were tied to other systems and it would be stupid if he was below V1 to not reject.

Captain leadership training was "charm school" they once had a long time ago when he first became a captain. There was no recurrent captain leadership program.

Interview concluded at 1345.

(Captain accompanied the Ops Group in the A320 simulator at 1400)

3.0 Interview: Kenneth Smith, USAirways Airbus A320 Captain

Date: April 28, 2014
Location: Via telephone
Time: 0905 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Patrick McCoyd, Lawyer; Foehl & Eyre

During the interview, Captain Smith stated the following:

His name was Kenneth Edward Smith, and he was 62 years old. His title was Captain on the A320. His date of hire with USAirways June 2, 1986 (originally with Piedmont Airlines), and he was based on Charlotte, NC (CLT). He estimated that his total flying time was over 21,000 hours, with about 5,500 hours on the Airbus. That Airbus time included about 2,600 hours as pilot in command (PIC) and about 2,800 hours second in command (SIC).

Prior to being hired by Piedmont Airlines, he as a corporate pilot in Greensboro, NC (GSO) flying a Lear jet and a King Air. Prior to that he was a cargo pilot flying the C144 turbo-prop for

Wrangler. Prior to that he was a charter pilot and flight instructor flying out of GSO. He learned to fly in GSO in 1977.

He held an Airline Transport Pilot (ATP) license with type ratings on the Lear, B737, B757/767, and the A320. He held a first class medical certificate. He had never been a check airman at USAirways.

When asked if he had ever flown with the accident first officer (FO), he said they had shared a trip prior to the accident that started on March 6, 2014. That was the first and only time that he had flown with her. It was a 4-day trip that started in CLT. However, on the first day, they had a "fatigue event," and they picked up the trip on the second day in CLT. They had an unscheduled equipment change, and the equipment they were waiting on was an international flight, and it took some time. When they got to the airplane, it had a maintenance issue for the toilets, and the departure was delayed to the extent that they had reached their flight duty time for the day. They started the second day by flying to Minneapolis, St. Paul (MSP).

He said the trip was a "completely normal and uneventful trip." They did not have any flights through Philadelphia, PA (PHL) since he tried to avoid PHL. He said "Philly is a nightmare and chaotic." He also had a past incident with another individual and did not wish to travel to PHL. He did not have any problems with ATC in PHL. He said he did not get too many runway changes in PHL.

He said the accident FO was very open, quiet, and easy to get along with. She was very pleasurable, competent, and meticulous with her tasks. She complimented the way he ran his cockpit, and he said some FOs had difficulties accommodating to the different styles of different captains. He said to her credit, they did not have any issues.

Her flying was competent, and he thought she was a good pilot, and he was not the least bit nervous when she took control of the airplane. He said she flew a standard operation; she flew how she was trained to fly. They had no issues with how they operated the airplane or on a personal level.

During the 4 days they flew together, he never saw her once struggle with the flight management computer (FMC). He said he liked to pace himself with the FO's pace based on where they were in their flows. He said the accident FO methodically moved through her flows and procedures. While loading the weight and balance, rerouting, etc., he had every indication she was competent, and her pace of work was as competent as any FO he had seen. The majority of responsibilities prior to departure rests with the FO. She was not "hands flying all over the place" and her pace was no faster or slower than anyone else. She knew what she was doing, and he did not have to correct anything she had missed. He had good feelings about her after he watched her fly on the second leg.

He did not see the FO operate under any pressure or time constraints, but that was not how he liked to run his cockpit. He tried to be aware of where the FOs were in their tasks and assignment, and would not initiate another assignment until they were complete. He was aware

of where they were in their flows, and if he felt like they were time constrained, he would stop. He would not fly with his FO rushed.

He had not heard the FO voice any concerns about flying for the company or on the Airbus, and she seemed very content with her position. She adhered to standard operating procedures (SOPs), and he thought "she was really good." She was good, and she was not a new-hire. He said "she was at a good point."

He said her primary strength was her flying ability, and "she was a good stick." She was never behind the airplane, and was able to anticipated events. He had no indication that the tasks she was assigned were a challenge. He determined that she knew her job.

He said one weakness may have been that, being a lady and him having a strong personality, it might make some female pilots not be as assertive as he would like, and he said he was working on that. He did not witness this with the accident FO. He said he could sometimes be intimidating, but they had no issues together. When they had the fatigue issues at the beginning of the trip, she was 100% supportive, and complimented his concerns on the fatigue issue. She also helped him out by finding additional information. He did not see any weaknesses in her.

He said the FOs did a majority of the work on taxi out. They had ¾ of the workload during taxi. While he would taxi, the FO was doing all the technical aspects of the flight preparation.

He seldom had a runway change in PHL. Sometimes they would send them off of 27R, but it was rare. If the FO was the non-flying pilot, he would have to make sure the runway and speeds were changed if the runway was changed and make sure the captain and FO displays have the appropriate numbers. On the weight and balance final, he would verify that they were approved for that runway, and had the numbers for that runway. Most of the responsibility was on the PNF. He said those things took time. Runway changes were usually known ahead of time. He realized that it did happen in PHL, but not often. It was the captain's job to be ready. He was sure he had had a late runway change in his career but could not remember one recently. If they needed to stop, they would stop.

When asked if he had seen a wrong runway entered in the FMC prior to departure, he said yes. The FO would read from the final weight and balance, and the checklist was a challenge and response. He would respond by reading the corresponding speed value on the PFD and MCDU. He verified what the FO was telling him. It was wrong to just repeat what they were saying without verifying the speeds were on the displays. He said the checklist "is our barrier." Runway changes had been trained in the simulator and it was shown what the displays looked like when there were no speeds entered. He did not think he ever departed without V-speeds before.

When asked how pilots were taught to handle an "ENG THRUST NOT SET" ECAM on takeoff, he said he would retard the thrust levers and try and figure it out. You would get an alert when you go to the Flex mode. If he knew what the chime was, he could go to TOGA thrust and continue. It depended on where he was on the roll, but the option was to go to full thrust; he had not had to do that before.

He had not had to reject a takeoff before on the line. The captain called for the reject. Either pilot could call for a reject, but the captain executed it. He had never heard a "retard" aural alert on takeoff. He had heard it was a possibility, but had never seen it or had it demonstrated. He thought it occurred somewhere around 80 knots if no takeoff numbers were entered, and the machine would advise you to retard. He had never had that demonstrated to him in training. He heard about it subsequent to the accident about the need to populate the numbers after a runway change. Pilots had speculated about what happened in PHL. If there were no numbers on the PFD, and no Flex temperature, the autothrust would advise a retard around 80 knots. He had never had a problem before.

USAirways issued a crew broadcast message (CBS) to remind pilots to put the speeds and temperatures in after a runway change. It did not specifically mention anything about a "retard" aural alert.

The checklist was the barrier put in place by the company to ensure the numbers were in, "so we shouldn't get there."

He had seen where they had the wrong runway before, and on that occasion he advised ATC that they needed a few minutes. What caught him was when they ran the checklist and the V-speed numbers were not correct for that runway.

He did know anyone else who had flown with the FO or heard any complaints about her since he was a captain and did not fly with other captains. That trip was the first time he met the FO. He had seen her since the accident when he saw her last week in CLT getting on the crew bus. He said hello to her and gave her his support. They did not talk about the accident.

He did not know the accident captain.

He said at USAirways they were "go, go, go." Their mission statement said it began with safety, but "it might as well be on time performance." There was a lot of pressure to push out on time. Delayed pushbacks would get an inquiry from the chief pilot's office, but not for delayed takeoffs. He added that the company was entitled to call and ask him about any delay, and he had been called before, but had never been harassed when the the situation was plausible or safety related.

He thought that a reject would require an event report, but he had never had a reject before.

He said the FO's CRM skills were "wonderful." Within a relatively short period of time on the trip, the fact that she was a lady was a non-issue. He was comfortable with her and he would work with her again. She always made the required callouts.

During the fatigue event on the first day of their trip, he said she was knowledgeable, supportive and assertive. She played an active role in his decision to "pull the plug" with scheduling. She made him comfortable about his decision. He had no indication that she would feel uncomfortable not speaking up.

He repeated that he had never heard the "retard" aural alert on takeoff before. He did not know that the "retard" feature had a takeoff function. The CBS message was more about a runway change and to verify that the takeoff numbers were set. He said it did not talk about the "retard" message. The first time he heard about it was from other pilots. He had not experienced it before, nor spoken with anyone who had experienced it. He had never seen it demonstrated and he had been through initial training twice on this airplane.

The checklist was challenge/response, and on the taxi checklist was where it talked about takeoff data, and you were reading off the PFD/MCDU. If he saw the numbers, he accepted them as being properly installed since he did not enter the numbers; it was an FO function.

The below the line portion of the checklist, if a discrepancy was noticed in the runway that was entered, there was an opportunity to verify the minimum takeoff fuel and the proper runway when going below the line but it did not verify the takeoff numbers. It was a personal technique, if he saw they had the wrong runway when below the line, he would rerun the entire taxi checklist. For a runway or routing change while taxiing, the FO would make those changes, regardless of who the PF and PM were.

He had never been trained where the FO called the reject, and it was the FO's responsibility to advise the captain. The FO was there to supply the information to the captain and the captain would make the decision and perform the reject.

He would look at the tare sheet prior to departure, and the FO would have put that within reach of him. The accident FO handed him the tare sheet, and she made sure he had the information.

He would not expect to get a call from the company if he had to delay a departure after they were underway, only for a delayed pushback. They got a lot of support from the company, and once he was off the gate, he had not received a call regarding any delay.

He commented that he was coming into contact with younger FOs, and asked how he could put them at ease in a quick few minutes since he was older than them.

He said if he had the accident FO on his trip in the future, he would be happy and comfortable. He did not know what role it had with the accident, but their single engine taxi procedures "lended itself to high workload toward the end of the runway." He said "there's fur flying up front trying to start the next engine." There was a whole lot going on in a small amount of time. He did not endorse it, and it was a recipe for "haste makes waste", and he reluctantly complied but made sure his engine was started before he got near the runway. He had seen runway changes during single engine, and it would get busy.

The interview concluded at 1020.

4.0 Interview: Lock Floyd, USAirways Airbus A320 Check Airman

Date: April 29, 2014
Location: Via telephone

Time: 0830 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Interviewee declined representation.

During the interview, Captain Floyd stated the following:

His name was Marion "Lock" Ralph Floyd, and he was 64 years old. His title was Airbus 320 Captain at USAirways, and he was a check airman (all seats/all checks) and instructor evaluator. He held a 1st class medical, an ATP and FE license, a dispatcher's license, and was type rated on the A320, F28, F100, B727, B767, A330, and C141. He estimated his total flight hours at about 27,000 hours, 15,000 hours PIC, and about 2,000 hours on the A320. He had been a check airman on the A320 for about 7 years, and it was his first experience as a check airman. He was also a flight examiner on the C141 in US Air Force.

He graduated from Clemson University, and began in the US Air Force in 1971. While on active duty, he was based in Charleston, SC (CHS) on the C141 from 1972 to 1976, and in June 1977 he was hired by Braniff Airlines. In 1983, he flew for People Express until he was hired in 1985 at Piedmont Airlines.

When asked if he had trained the accident captain, he said that he had been trying to put a face to the name and he thought he knew who he was. He had reviewed the captain's training record, and he had done the captain's CQT in December 2013 on the A320. Continuing Qualification (CQ) was a 3-day process, with 1 day of ground school followed by a maneuvers observation (CMO) on day 2, and the third day was a line-oriented evaluation, which was a 2-leg flight. He did the day 2 training day and day 3 evaluation on the accident captain.

He did not remember if the captain was paired with another first officer, or a seat-support pilot. Generally, they tried to have seat support if another pilot was not going through training at the same time, but sometimes they had just the pilot and the check airman. When it was busy in training, they made every attempt to crew pair the training.

He did not recall the captain's training, and generally remembered the people who had problems. He did not recall anything about the ride with the accident captain at all, and did not recall if he had done training or checking on the accident captain prior to December 2013.

When asked about reject training, he said that the current year's CQ started with the FO as pilot flying (PF), and they gave the crew a fire indication at 100 knots. The captain would perform the reject maneuver. It was the captain's decision whether or not to reject. They did not teach the FOs to call for a reject. They were taught that anyone who noticed an abnormal to call it out, and the captain made the reject. Less critical items were inhibited on takeoff on the A320. FOs were not taught to make a reject based on captain incapacitation.

He said that they were trying to be standardized and methodical with their ECAM procedures, and taught the non-normal methodology and to handle it the same for all events. It was an

organized and methodical approach. The first action was to maintain aircraft control. Then the PM silenced the alerts and the first person to see the non-normal would announce it. Once the aircraft was under control, the PM would refer to the QRH for immediate action items or exception items. If it was an immediate action item, they would not transfer control. It was not an immediate action item, the captain would determine who was the PF and PM. Most of the time they wanted the captain to be PM so he could manage the emergency. The PM would then run the ECAM procedure, and when completed, he would follow up with QRH for follow up actions. They also had the non-normal supplemental manual to refer to if there was time. They were also taught to talk to OCC, MOC, and the dispatcher if other guidance was needed.

He said the engine thrust not set ECAM was not trained in their CQT, but may be taught in initial training. For that ECAM, you could go to TOGA thrust. The first step was always to maintain aircraft control and he considered going to TOGA thrust as maintaining aircraft control. When asked why it was not listed in the QRH, he said it was not an ECAM that included ECAM follow up items. He was not sure if the guidance to go to TOGA thrust with the ECAM was listed in their manuals. He thought he had seen that ECAM on the line while flying, and it involved the computer requesting a TOGA thrust takeoff when the thrust levers were at Flex.

He did not think he had ever heard a "retard" aural alert during takeoff, and was not sure if there was any guidance on that alert. He said it would be a judgment call for the captain to reject based on when it occurred.

He said that above 80 knots was the high speed regime. After 80 knots they rejected for something catastrophic like an engine failure, fire warning or a perception that the airplane was unsafe to fly. As you got close to V1, it was better to continue the takeoff. The procedure was that below 80 knots it was considered low speed, and above it was considered high speed.

He had not seen anyone attempt to takeoff without any V-speeds, and he would expect them to reject. They did not train for that, although they changed the syllabus each year.

He said the company looked at all kinds of data for their training program, like FOQA, ASAP, and AQP data. The common errors were looked at and typically entered into SPOT training. The common errors he had seen were on things like a V1 cut, where the pilot did not introduce the trim prior to autopilot engagement. He said there may also be some issues with a windshear scenario and reconfiguring the aircraft. Another mistake was on a rejected takeoff, once the aircraft was aborted, where people rush through the non-normal methodology and procedures and made a mistake.

Flying the line, he had never seen a pilot take a runway with no V-speeds, and it was not trained. They would get the data at the gate, take their time, and make sure it all got done.

He had not seen a last minute runway change on the line, but it was one of their scenarios about a year ago to task load the pilot to make sure he got the things done that needed to be entered.
There were no comments included in the captain's training records, and the only information was the name, date, and "sat" or "unsat" in a pilot's records. Instructors would make notes on the job

aids, and those were discarded after the briefing. Comments were not retained, but for an unsatisfactory ride, they contacted the senior check airman to inform him and fill out a form.
He did not know the accident FO, and said that since the accident, details about the accident were very scarce and they did not have a lot of information about the accident. There had not been any talk about changing procedures since accident. There was a CBS message sent to the pilots about ensuring numbers were in the FMC, and that there was a "retard" alert for Flex takeoffs without an assumed temperature, but it did not include instructions on what to do with the "retard" aural alert. He was not exactly sure what it said specifically about the retard alert, and would have to look at the message.

When asked how they trained for CRM, he said threat and error management (TEM) was the heart of the program. It was introduced during the CMO (maneuvers observation) and heavily looked at during the LOE evaluation portion. CRM was part of the ABCs of TEM module, which included assess the situation, balance the barriers, communicate and SOPs.

Check airman went through recurrent training every year. They went through what they were going to be teaching students for the coming year, and that cycle began May 1st each year.
He said not all ECAMs followed the ECAM methodology, and some were not required to be followed, like when taxiing out on a single engine for routine ECAMs that did not need to be followed. He was not sure if there was a list of those ECAMs that did not follow the regular methodology. One example of that was when they got an ECAM when the cargo doors were opened after taxi in, and that would be a routine ECAM.

Response to the engine thrust not set ECAM would be a captain's judgment call on whether to reject or not. It was not a memory item and first thing was to maintain aircraft control. Other routine ECAMs were a judgment call. Asked if a captain should reject for engine thrust not set if received below 80 knots, he said there was a broad range of things to reject for below 80 knots and it was the captain's decision whether to reject or not.

The term "aircraft is perceived unsafe to fly" was a captain's judgment. For instance, on a takeoff with windshear, it was inhibited so there would be no warning but the speed could be perceived as an indication that it was unsafe to fly.

He had never heard of the "retard" alert on takeoff, and only heard it routinely on landing. It would be the captain's judgment to reject a takeoff based on the "retard" aural alert.

He was somewhat familiar with how the Airbus advances to the different flight modes, but they did not train that in CQT and he was not sure if it was part of the syllabus. He did teach, as a technique, on an engine failure, to adjust the amount of stick movement as the airplane blended from normal ground law to flight law.

He said they did route clearance verification while at the gate, where they would enter the flight plan into the FMCG. Once the clearance was received, the PF who loaded the box would have the paperwork in his hand, and the other person was going to read from the actual routing route in the FMC to make sure it was verified with the clearance. He was not sure if the route verification included the takeoff runway, but some SIDs were for designated runways, and that

would be included. That was something he taught, and was not sure if it was his technique or a procedure. As part of the route verification, that was not where they properly verified the runway. It would have to be included as part of a SID. They did teach to have the plate out if it was part of an RNAV departure.

He did believe that the students saw the thrust not set ECAM in initial training, and he thought it was in T1 training as SPOT training. Day one was an introduction to the simulator, and in the pre-briefing, it was mentioned. They may have trained for it in CQ in the past.

They collected data differently for initial and qualification training. For initial qualification training, they were graded as proficient or needing additional training.

He discussed the various point scales used in AQP, from 5 to 1 (5-no errors; 4-errors but corrected; 3-error not corrected but not safety of flight; 2-error not corrected and was safety of flight). The biggest difference between the 2 and 3, was that a 3 could be de-briefed or repeated, and a 2 had to be repeated. Any time they graded a 3 or lower, a pop-up window appeared to enter additional information.

One of their evaluation scenarios was a runway change. There were certain things that needed to be done when changing a runway, and they did those regularly. The below the line flow was to verify the runway was correct. In CQT for the captain, a runway change could be possible, but they had multiple options and city pairs, and it might not have been written in the syllabus.

The interview concluded at 0930.

5.0 Interview: Richard Fera, USAirways A320 Check Airman

Date: May 1, 2014
Location: Via telephone
Time: 0900 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Larry Rooney, USAPA

During the interview, Captain Fera stated the following:

His name was Richard Lee Fera, and he was 51 years old. His title was Check Airman on the A320 at USAirways. His date of hire was July 22, 1985, and he had been an all-seats, all-checks check airman on the A320 for about 2 years in July. He was previously a check airman on the E190 for about 5 years. His background was all civilian aviation, having flight instructed as a CFI for several years then flew for Pennsylvania Airlines out of Harrisburg, PA for 1 year. He then went to work at Piedmont Airlines in July 1985, and the airline merged and became USAirways. He held an ATP with type ratings on the A320, E190, F28, F100, B737, and B757/767. He also had a 1st class medical certificate with no limitations. He estimated his total

flying time as 19,500 hours, with 8,000 hours as PIC. He had about 1,000 hours on the A320, and all of it was PIC time.

When asked if he trained the accident FO, he said yes, he understood that he did, but he did not remember her, and tried to picture her face. He did not review her training records prior to the interview. He was told he provided her training in May of last year, and could not recall if he ever provided her training prior to that date. He did not recall her training since he did about 180 events in last 12 months. He remembered the students from initial training sessions, but the CQT events were harder to remember. He said he worked with about 250 pilots last year, and there were too many faces and names to remember.

He had heard the accident captain's name recently, and did not think he had ever provided him training before.

He said the FO's training records were de-identified, and he did not have access to those files. The way their data collection worked, it was all de-identified. Comments on training were not retained, and the information was deidentified. Any notes he would take in the simulator were torn up later and thrown away.

When asked how pilots were trained to handle runway changes, he said if they got a runway change, there were two places to go to enter the information. If they already had their weight and balance, first was the flight plan page to put the runway in. The pilot would then get a scratch pad memo to check takeoff data. They would then go to the perf page to reload the takeoff data. They would then need to check the route to see if the waypoints were correct or if there was an RNAV departure, re-brief that, and then brief the departure for the new runway. Part of threat and error management (TEM) was task loading (number of tasks over time), and to manage the situation, the pilot would either decrease tasks or increase the time. Pilots would have to increase time because they could not reduce tasks. A previous CQT training session covered runway changes. Task management was a concept woven through all of their training. The CQT with the runway change also had a video, and this was about 3 CQT cycles ago. He did not know if the video was still available on the "learning link," and was not sure if it was retained. The video included was for the B767, but it was also shown to all fleets.

The requirement was for the FO to do the runway change, the route verification at gate, and on taxi verify once the weight and balance was complete. The captain is supposed to review the data entered in the FMC to ensure everything is correct. When asked how the captain would know the entries made in the FMC were correct, he said it was through the route verification procedure, and then on taxi checklist where it said "runway and FMS," and he would then check the runway. They both would verify the runway at that point. Before taking the runway flow, the captain should check to make sure the FMS was correct. Both pilots should check to make sure the runway was correct. The checklist said runway/FMS so that would include V-speeds. Runway/FMS was for the PF to have the flight plan page displayed, and PM to have the performance takeoff page displayed. That was a below the line item.

He had never seen anyone takeoff without V-speeds and it was not trained. His expectation of a takeoff without V-speeds would be to revert to the reject criteria below 80 knots. After 80 knots

and up to V1 was high speed. If there were no V-speeds at 81 knots, he would perform a rejected takeoff. Below 80 knots was low speed, and he said he would expect a reject on the low speed regime. He said above 80 knots, and the closer to V1 the airplane got, "the decision leans toward the go decision." If you were approaching V1 and there were no V-speeds, the safest thing to do was to fly the airplane. The pilot handbook stated recommendations for a reject. The pilot could reject for any master caution or warning below 80 knots. Above 80 knots, most of the master cautions were inhibited. If any of those that were not inhibited went off at, say, 120 knots, then that would probably be something you want to reject for.

The captain called for a reject, and the captain also executed the reject. In TEM, they taught communication, and if the FO saw something they were not happy with, they could call it out, and the captain would then make the reject decision.

When asked if he had ever heard an aural "retard" alert on takeoff, he said no. He assumed it would be because he did not have any V-speeds. They did not train for that, and he said that would be "negative training" since he would be telling a pilot to disregard all the barriers to get to that stage. He had never seen that situation demonstrated.

When asked if no V-speeds would be a reason to reject, he said yes, and he would expect them to reject, and then taxi off the runway. There would probably not be any brake situation since the reject occurred at low speed.

When asked about his expectations of a takeoff with no V-speeds and "retard" message and trying to get airborne, he said the V-speeds would not be there, but the airplane would still fly fine, you would just have to rotate and climb out. He said you may have to check the performance data from there, but "there was no reason the airplane shouldn't fly." Typically, the V-speeds were not that far off from the previously briefed V-speed, especially for PHL.

His belief was that if you went to TOGA thrust you would not get the "retard" alert. An ECAM message for thrust not set alone was not a criteria for a reject. The pilot handbook told the pilot to just set TO thrust in response to that ECAM. They taught a non-normal methodology on how to handle ECAMs, and that ECAM was one that the pilot did not use that methodology to handle. It was in the normal section of the SOPs, and it was trained in lesson one of their qualification course. He did not recall if it was trained in CQT. He thought there may have been a distance learning module on it. If the retard alert came on at 80 knots, he would expect a pilot to reject, get everything back to normal, assess the situation from there and then continue.

When asked if there were any scenarios for a FO to assert themselves to the captain, he said yes, but they did not set up a specific scenario for that. Most of their LOFT legs were set up to challenge the crews with task loading. One of the TEM "ABCs" was communication. If a pilot was in the yellow and not in the green, they should tell the other pilot you need more time. The same applied to the captain. They could always delay or ask for vectors. He said "it's a back and forth thing with TEM." If they did not communicate it in a training session, it may be a de-briefing item. If an FO was feeling rushed and needed more time, they should say they need more time. The training was set up to task the crew, and he would want to see how the crew handled the task loading.

When asked if there was guidance that discussed how to do a runway change, he did not specifically recall the steps in order. He was not sure if there was an "abc" procedure that went step by step, and was not sure if there was a flow chart for it.

The route verification was done at the gate, and pilots did verify runway in the route verification based on RNAV departures. The departure briefing included runway information because they had to discuss the planned taxi route.

A pilot would have to uplink the wrong runway and wrong data at the same time to have the FMS not set.

He said 1-3 minutes before departure was the runway flow for below the line. Below the line was the time the runway was mentioned in the checklist, but it was also part of the before start flow. The FO would read V-speeds from off the weight and balance, and the captain would read them off the MCP and FMC. It was the final trap to make sure everything was in there. On the taxi flow, the captain was supposed to check the accuracy of the weight and balance. Crew verified the correct runway when they went below the line on the checklist.

You only got the "retard" alert on landing so he assumed a "retard" on takeoff meant the airplane thought it was landing. A thrust not set ECAM told the pilot to push the thrust to TOGA. It told them there was no flex temperature set. The pilot handbook specifically said to then set the thrust to TOGA.

He would hope the FO would call out any abnormals, and the captain would make the decision to reject. Just because the captain made the decision to reject did not mean an FO cannot communicate items to bring to the captain's attention. You had to assess each situation differently, and it was up to the captain.

He was familiar with some of the flight modes and phases. There were probably modes that Airbus had that he was not aware of. Those phases he believed were trained. He was not sure about the phases 1 through 10.

He said if there was a bulletin that came out that did not have someone's contact information, they could always call scheduling to get a hold of someone. His point of contact in the training department was Steve Danahower.

Regarding assertiveness, he said they train "Don't hint or hope." Pilots should state concerns specifically. That has been a part of their TEM from the beginning and pilots understood this.

For runway verification below the line, the captain would verify the speeds using the FMS and Nav, and then the physical runway.

The interview concluded at 1020.

6.0 Interview: Gary John Blohm, USAirways A320 First Officer (FO)

Date: May 1, 2014
Location: Via telephone
Time: 1100 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Larry Rooney

During the interview, FO Bloom stated the following:

His name was Gary John Blohm, and he was 48 years old His title was first officer on the Airbus. His date of hire at USAirways was September 18, 1989, and after being hired he trained at Piedmont Airlines for 6 months. He previously had flown the B727 as a flight engineer (FE), the B737/200/300/400, the B757/767, and the E190 for USAirways. He was a captain when he flew the E190. Prior to USAirways, he attended Embry Riddle University where he flight instructed, and then flew in the Caribbean on Twin Otters for 8 months. He then was at Business Express on the BE1900 for 2 years, at UPS on the DC8 as an FE, and then hired at USAirways. He held an ATP license with type ratings on the B737, B757/767, A320, A330, BE300, BE1900, and the F28, and a 1st class medical certificate.

He last flew with the accident captain on a 3-day trip toward the end of February 2014. He had not flown with him prior to that trip. The first day of the trip was to Kansas City (MCI) and back, and then to Washington, DC (DCA). Crew scheduling took them off the trip from there, but he did not remember why. They had the overnight in DCA, and the next day they deadheaded to Philadelphia (PA), and then flew to Indianapolis (IND) and overnighted there. They then deadheaded back to PHL, and finished with a Chicago (ORD) turn before he went on vacation.

The biggest thing he remembered about flying with the accident captain was that he enjoyed flying with him, he ran a good cockpit, and he looked forward to working with him again.

He characterized the accident captain's flying skills as "well above average." It was something that just stood out to him.

The accident captain was very nice and approachable, and got along with everyone. He said if he had spoken up, the captain was one who would have listened to him.

He did not remember ever feeling rushed during the trip. There were no abnormals or emergencies encountered when they flew together, and the only significant event was that the weather was bad in ORD. The captain did a great job handling it, and he followed the book down to the letter.

He never heard anyone express concerns about flying with the captain, and he said "I would fly with him again."

The captain never expressed concerns to him about the company or flying the Airbus. He had good checklist discipline, and nothing really stood out about him. He said compared to other captains, he was "well above average."

He described the captain's strengths as doing a nice job flying the airplane, and he ran the cockpit well. He could think of no weaknesses. He considered the trip with the captain as normal.

There were no alerts on takeoff handled after getting in the air during their trip together. He heard of no one saying anything bad about the captain.

He did not know the accident FO, and never heard anything negative about her.

He said that the captain ran a good cockpit, and that meant running the checklists, good leadership, and adherence to SOPs. He was strong in all of those areas.

During their trip together, they did not have an occurrence involving taking off without a Flex temperature set and requiring a TOGA takeoff. He had never experienced that.

The interview concluded at 1120.

7.0 Interview: Jennifer Gustafson, USAirways Airbus A320 First Officer (FO)

Date: April 28, 2014
Location: via telephone
Time: 1100 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Interviewee declined representation

During the interview, FO Gustafson stated the following:

Her name was Jennifer Lynn Gustafson, and she was 42 years old. Her current title was first officer (FO) on the Airbus at USAirways. Her date of hire was March 17, 2008, and she was based in Charlotte, NC (CLT).

She estimated that she had about 14,000 total flight hours, with about 1,300 hours on the Airbus as an FO. She had been on the Airbus for about 2 and a half years. She graduated from the University of North Dakota, was a flight instructor, and flew the DHC-8 for Piedmont Airlines for about 10 years before being hired by USAirways. She was a captain on the DHC-8 at Piedmont. She had an ATP with type ratings on the DHC-8, B737. E190/175 and Airbus, and held a 1st class medical certificate. She had never served as a check airman.

She previously flew with the accident captain in December 2013, January 2014, and February 2014. She said the last trip she flew with the accident captain was March 1, 2014, for two days.

It consisted of one leg to Syracuse, NY (SYR) on March 1, and one leg back to CLT on March 2nd. There were no abnormals or emergencies encountered during the two days, and the only significant event was that they had to de-ice in SYR.

She said the captain was "kinda quiet," and was standard. He followed company policies and procedures, and she was comfortable with him. She would not hesitate to speak up with him. He had open communications, and he respected her opinion on things. She thought he was a good pilot, followed their procedures, and did great. She said he had no issues working with the FMC. They did not have to work under time pressure during the pairing. He adhered to the SOPs. He ran all checklists and did the challenge/response as required.

He never pressured her to get checklists done, and she never felt rushed. She was able to take her time with him. She said that flying as much as she had, she would not have felt a problem speaking up with him. She said one time (with a different captain) they were delayed, and it pushed into their duty time, and she told captain to call dispatch and get a new weight and balance.

She said they performed single-engine taxis at USAirways, and it "sometimes makes you a little busier" but if they had a long taxi they were not too rushed. The time compressions depended on when the second engine would get started.

For changes of runway during taxi out, the FO would have to re-select a different runway, then go to the performance page in the FMC to re-enter the numbers from the weight and balance, including V-speeds and the assumed temperature. When asked if she ever forgot to put those numbers in prior to departure, she said recently she was in CLT and they were departing on 18L, but they needed to take off on 18C, and she caught it. When she did her flow, the captain had the flight plan page, and she had the performance page up, and "the barrier was the flow." There was a key on the FMC to enter the previous takeoff numbers, but sometimes the numbers could be different for the new runway and would have to be entered manually.

She had not been trained to takeoff without V-speeds. If she received the engine thrust not set ECAM message, she would read it out loud and tell the captain. She did not know if a captain would "technically" reject for that ECAM message, and they could always go to TOGA thrust.

She had no problems with flying with the accident captain, and he was very well liked. She would not avoid flying with him. She considered his strength as being enjoyable to fly with, and he followed the policies and procedures. He had open communications with her. She did not know him well enough to say what his weaknesses were.

FOs were not trained to call for a rejected takeoff. She would state the problem, then depending on the situation the captain would call for and execute the reject. She believed the accident captain would take her advice, and would consider her judgment.

She liked flying for USAirways. Sometimes there was pressure to get off the gate on time, and shut the door 10 minutes prior to departure, but USAirways promoted safety first.

She could not recall if she ever flew with the accident captain when they had a Fort Lauderdale, FL (FLL) overnight. She never felt rushed with him, or in need of a few extra minutes to complete a checklist.

Her total PIC time was about 3,000 hours.

She had never had to reject a takeoff at USAirways. She had never heard a "retard" aural alert on takeoff, and had never taken off without V-speeds.

She knew who the accident FO was, and never heard anyone comment on her flying abilities.

She had never had an emergency or abnormal with the accident captain before. He had never voiced any concern to her about flying the Airbus, and he enjoyed his job and seemed knowledgeable of the airplane.

She had spoken to the captain on the phone a couple of times to see how he was doing. They did not discuss the accident.

She said on the CLT runway change event, she thought they had started taxiing out, and the numbers came out, and they realized they needed 18C because of their weight. They were still taxiing on the ramp when they switched runways. She did her flow, and then realized they had 18L in the FMC and needed 18C. They had just started the taxi checklist and she saw on the Perf page there were no numbers.

She had only heard the "retard" aural alert on landing at 30 feet. No one had told her about getting a "retard" alert on takeoff and it had never been demonstrated to her.

The barrier she used to trap the runway change in CLT was her flow, but there was also a below the line item to verify the runway. They had 18C in there, but had not put the numbers in, and caught it through the flow. The pilot flying would have the legs page up on the FMC, and the pilot monitoring would have the performance page up on the FMC. If the performance page was not up, you might not see the numbers.

She had been on the Airbus for about two and a half years. She had recently gone through training, but did not recall what to do with a Flex takeoff after receiving a chime that the thrust had not been set.

For the CLT runway change, she had noticed it on her flow, they had changed the runway, but did not have the V-speeds. They had done the taxi checklist, and they were to the line. When they got below the line on the checklist, she saw that they had the correct runway, but in the FMC they did not have the takeoff numbers.

The interview concluded at 1135.

8.0 Interview: John Hope, Airbus Fleet Director, USAirways

Date: June 25, 2014
Location: Via telephone
Time: 1430 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Captain Thomas was represented by Chris Julius, USAirways legal counsel

During the interview, Captain Hope stated the following:

His full name was John Patrick Hope, and he was 55 years old. His title was Fleet Director, Airbus, American Airlines. He was appointed Fleet Captain at USAirways in November 2007, and then became Fleet Director in December 2013. In 1997, he was the Senior Check Airman for the Airbus 320 program. He previously was a B737 Check Airman in Pittsburgh in December 1994.

When asked what his roles and responsibilities were, he said he was in charge of interfacing with the FOSB (flight operations safety board) group, Airbus procedures on the A320 and A330 programs, and interfacing with the manufacturer.

Interfacing with the manufacturer meant that he got daily updates from Airbus on FOT (flight operations transmission), OIT (operators information transmission), service bulletin information transmission, alerts to operators transmission; they could come in anytime daily. He reviewed and looked at them monthly, including FCOM and FCTM updates. At any time, he could also be alerted from FAA, NTSB, and IASA of any ADs on the airplanes. He also received OEBs (operational engineering bulletins) from Airbus as well. He did not have regular meetings with Airbus, and would interface when needed with the Miami flight operations group at their facility there. Beyond the meetings in Miami, Airbus interface was driven by the flight safety department.

The FOSB at USAirways met on a monthly basis, but now met on a weekly basis because of the merger. He got a weekly airline safety index that included pilot reports, altitude deviations, navigation errors, clearance deviations, and runway incursions. FOSB made recommendations on those reports, and if they needed to be carried out into the fleets, they would do that. He said American and USAirways were still separate carriers, and most of his experience was with USAirways.

He did not know the PHL accident crew.

He was originally trained in Miami on Airbus procedures. At that time, he was to develop the training, policies and procedures that had been developed by others. His role was in the simulator to make the training work, and he worked for 4 months with an Airbus engineer to help make those policies and procedures. The individual that first developed those procedures, Tracy Barnett, was no longer with the airline.

He did not know why the high/low speed regime reject speed was chosen to be 80 knots. There was no documentation to support that decision. He said as a carrier they were using 80 knots, and Airbus had no objection to them using 80 knots as opposed to 100 knots. The Airbus FCOM stated that the 100 knots speed was not systems related, and only a dividing line between low and high speed regime. Their FCOM also stated that the speed of 100 knots was not critical, and only there to assist the captain in making a reject decision. He did not know of any risk assessment done when they decided to use the 80 knots reject speed on the Airbus and he was not aware of any assessment since he came to the Airbus program.

The June 3, 2013, note he sent to the pilots originated after the safety department brought the reject concerns to his attention through a safety pre-flight following two previous events, and he wanted to emphasize the procedures that were in the manuals with regards to setting takeoff thrust. He was aware that one of the rejects had a retard alert on the takeoff, but he found it difficult to understand how to get into that situation with the barriers they had. He did not include anything in his note about the retard because there was nothing in the FCOM or FCTM that the retard alert on takeoff was a possibility that he could reference. He did not remember communicating with Airbus about the retard alert on takeoff. He did not remember getting a response from them other than what would have been in the manual. He never saw anything from Airbus related to a retard alert on takeoff until after the accident when he researched it on Airbus World and saw an article from Airbus about the issue. He never heard about it until post-accident, and after he put out the notice to all Airbus pilots he later found out it was not applicable to the A330 based on feedback from his check airman because the flight warning computers were different. There had been different variations in the flight warning computers over the years.

He had never heard of a retard alert on takeoff on an A320 until the safety department put out their safety pre-flight message. He never received feedback from A320 check airmen that a retard alert could occur on takeoff, and his check airman had never heard of it, either. There was no notification to the training department or to the check airman regarding the retard alert other than what was in the safety pre-flight.

He could not find anything in the Airbus manuals that discussed the retard alert on takeoff. The retard alert was never discussed in FOSB, and the only conversations with Airbus concerned a tailstrike issue in Las Vegas that he still had ongoing concerns with Airbus about, hard landings, and a Vapp on top of a Vls. Since the retard issue was not in any of the manuals, he said it was more of an "anomaly" of the system. They did teach about the "retard, retard" but only in reference to the landing phase of flight. He could not recall if he spoke with the safety department about the retard alert after the safety department published their safety pre-flight that included information about the retard alert.

He had never heard of a retard alert on takeoff on an A320 until the safety department put out their safety pre-flight message. He never received feedback from A320 check airmen that a retard alert could occur on takeoff, and his check airman had never heard of it, either. There was no notification to the training department or to the check airman regarding the retard alert other than what was in the safety pre-flight.He said until they got more of a direction from the manufacturer regarding the alert on takeoff, they considered it more an anomaly of the flight

warning computer, and would be more confusion for a pilot on takeoff. They emphasized threat and error management to handle issues, and looking at their SOPs, he did not know how a pilot would get to that situation of encountering a retard alert on takeoff.

He would have to go back to Airbus to see if it was an anomaly, a nuisance alert, and he did not know why it was happening on takeoff, other than not following their SOPs and automation barriers. He did not understand the inner workings of the software. He had not formally asked Airbus to get an answer from them, but he planned to do that.

Taking off without V-speeds had never been trained at USAirways. He never did that, and that would be considered negative learning in a training environment. They reinforced SOPs, policies and procedures for verification of the V-speeds, and threat and error management. The airline's expectations for a pilot confronted with no V-speeds would mean that they did not finish their checklist, and they should not have taken an active runway.

Last minute runway changes had been trained. When FOSB had a directive to the fleet based on a negative trend from the safety department, they developed a training module where you could get into trouble not following clearances and possibly having navigation errors. What they did for a year was they created an environment in CLO where they got a last minute runway change. Pilots had to change the runway, and include the electronic standard instrument departure associated with that new runway. Re-populating the V-speeds and the flex temperature in the FMC was also part of that module. That module was in place for a solid year, and was still in their recurrent training in their continuing qualification program. It first began in the 2009-2010 training cycle. They collected pilot proficiency data to look at how they were demonstrating the new procedures, and they had extremely high confidence levels on the training based on the grading scales. Pilots were getting "5's" on the training for that module.

The other departments that interface with Airbus included the entire tech ops department, and safety. He was asked by Airbus North America Safety to build an agenda for their next safety symposium, and he did that with the safety group.

Regarding pilot monitoring (PM) training at USAirways, they had the ability to have Robert Sumwalt on their staff, and he had written many articles on flight crew monitoring, like one on the aviation safety reporting system (ASRS) presented at the Ohio State symposium. Back in 2002, USAirways changed from pilot not flying (PNF) to PM to more closely align with what the pilot was actually doing. It was backed up with a lot of NTSB investigations about inadequate monitoring and challenging, and came from FOQA and ASAP data, and was included in changing the flight ops manual. Both pilots played an active role through their threat and error management "abc's", and each had a set of barriers, and they stated in our procedures when both had to be active in monitoring and when both heads had to be up, as for taxi operations. This was what drove their pilot briefings in their training where pilots were de-briefed on PM and TEM skills in training. Pilots got a review of monitoring skills in training through a review of their threat and error management skills.

Verifying the takeoff runway was part of the route verification, in the FMS they picked up lateral revisions from the ATIS and the ATC clearance with both pilots in the loop. The route

verification talked about how to load the FMS, and verify it against the ATIS, the clearance and the route. The route verification did not specifically state the runway for departure, but he did not see how a pilot could not include that if they were doing route verification for departure, and it should be self-evident.

The only change in USAirways training and procedures since the accident was reinforcement of runway changes that he put out via a CBS message, and he followed that up with a bulletin to the manual. That occurred around the June 2014 timeframe.

The 80 knots was designed to define the low/high speed regime as it had been taught for many years at USAirways. It was used as a call out to make sure both pilots were in the loop, and also as an airspeed check for both pilots of all three airspeed indications. Past 80 knots a reject was based on the captain's assessment and use of his judgment beyond the critical items in the manual, and he could reject for captain's decision. It included the caveat of if they perceived that the aircraft would not fly. When asked if it was a sliding scale of importance beyond 80 knots, he said it was an individual assessment of the situation, as they were taught that as they approached V1, it was more a go decision. It was the pilot's judgment, and he was recently looking at that issue to see about putting more emphasis in the pilot making a judgment on the reject beyond the 5 critical items.

They had to be careful on how to introduce that since the judgment could be based on a number of factors like contaminated runway, or short runway, and they did not want to give a false impression through training that you were going to stop every time you got that specific situation. Currently they did not train that, and current training only included rejecting for the critical 5 elements.

He had never been in a situation where he started a takeoff and did not have V-speeds. He got information about reasons for aborts on the line, and it was primarily for bird strikes. He had not heard of a report for a pilot trying to take off without V-speeds, and had never done that himself.

When asked about the "perception airplane would not fly", he said it was not specifically trained, and he had never seen anything like that. It was based on the judgment of the pilot.

The Airbus had inhibited features that occurred past 80 knots, and the non-inhibited list of warnings [the 5 items] was what they got from Airbus and was spelled out in the FCOM. Those were the items they taught the pilots to reject for above 80 knots, to include the perception that the airplane would not fly. The guidance to reject based on the perception the airplane would not fly had been in their manuals "forever", but you could not really train that perception from a simulator perspective. He was planning on going back to Airbus to learn more about the retard alert on takeoff, and what they suggested the procedure should be to address it. He had talked to other operators about the retard alert on takeoff and if they trained it, and he was told that they had never heard of it either, and did not train it nor would they know how to train it. It was an on-going investigation for them because he considered it "unsettling." When they first learned about it in June 2013, it was considered an anomaly, and Airbus never put anything out about it to operators until December 2013.

He said if he got the aural retard at 80 knots, he would consider it a nuisance, but would reject to figure out why he was getting the alert. He would reject early, and not wait until getting close to V1. He would encourage pilots to reject for the retard aural alert on takeoff if they got it in the lower part of the high speed regime, and that would be consistent with their threat and error management training since he had nothing from Airbus to back him on that. He said there would have to be multiple errors and pilots missing multiple barriers through SOPs, flows and ECAM procedures to get to the retard aural alert on takeoff, and it could be negative learning to try and train that.

The interview concluded at 1200.

9.0 Interview: Karen Hill, USAirways Administrative Assistant

Date: June 23, 2014
Location: Via Telephone
Time: 1400 EDT
Present were: Katherine Wilson, David Lawrence, Alyse Adkins – NTSB; John Sabel – USAPA; Lori Cline – USAirways
Representative: Chris Julius, USAirways Legal

During the interview, Ms. Hill stated the following:

Her title was Administrative Assistant 2 in the CLT chief pilot's office and had been in that position since August 2011. Her roles and responsibilities included pilot medical leave and other support as needed. When a pilot went on medical leave, she would get a proof of illness form then take the pilot off the schedule for 10 days. She sent the proof of illness form to absence management and if the leave was approved she would extend the pilot's medical leave.

She previously held other positions at USAirways in station administration, maintenance training, simulator engineering and human resources. Her date of hire was December 4, 1989.

She did not handle FAA medical certificates. Jasmine Brown, who worked in the CLT chief pilot's office, handled processing of pilots' FAA medical certificates. Pilot records also received a copy of the medical certificate and handled medical waivers.

She clarified that her role was to make sure that pilots who would be on medical leave for 21 days or more were taken off the schedule for the duration of their leave. She would receive the proof of illness form, took the pilot off the schedule for 10 days, and waited for the email from "absence management" to say if the leave was approved and for how long. When the pilot returned from medical leave, she would return them to the schedule.

She was not familiar with the accident crew but did review the accident captain's records. He was out on medical leave for an ankle injury in 2012 and for a heart issue but she did not recall when that was. If a pilot was not approved for absence after she removed them from the schedule for 10 days, the pilot would talk to the chief pilot. There was nothing out of the ordinary about the accident captain's records.

She did not handle a FAA medical certificate unless the medical certificate was due when the pilot returned from medical leave. If so, the pilot would give her the medical certificate and she would send it to pilot records. If a pilot was not going to be extended and they were returning on their original note, she would contact them 10 days prior to their return to see if that was still the plan, or if they would be extended due to additional appointments. If their plan was to return as scheduled, she would return them to the schedule.

This process changed in April 2014. The doctor's note now went to the AA medical department. That department would tell her how long to take the pilot off the schedule and whether it was substantiated or not.

She was not familiar with what the pilot records office did with the medical certificates. She did not know if pilot records shared the information with the chief pilots. Her only interaction with pilot records was that she would only scan the FAA medical certificate and send it to them.

She did not know how many pilots were currently on medical leave.

The interview concluded at 1412.

10.0 Interview: Ron Thomas, Managing Director of Flight Technical Operations, USAirways

Date: June 23, 2014
Location: Via telephone
Time: 1100 EDT
Present were: David Lawrence, Katherine Wilson – National Transportation Safety Board (NTSB); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Captain Thomas was represented by Chris Julius, USAirways legal counsel

During the interview, Captain Thomas stated the following:

His name was Ronald Joseph Thomas, and he was 58 years old. His title was Managing Director of Flight Technical Operations at USAirways, and Managing Director Flight Operations for American Airlines. He had been the Managing Director of Flight Technical Operations since 2010. Previously he was in an identical director position since 2005, and was the Manager of Flight Technical and Regulatory Compliance from 2004 to 2005, Supervisor of Flight Training and Standards from 1996 to 2004, and B727 second officer Flight Manager in 1992. He was hired at USAirways in 1987.

He described his roles and responsibilities as reporting to the Vice President of Flight Operations. He oversaw all flight documentation that was created, regulatory compliance, OpsSpecs, navigational charting and databases, flight technical issues that spanned across all fleets like windshear, worked with each fleet on those issues, airspace optimization, and represented the flight department internally and externally.

He currently flew as captain on the A319/320/321. He previously became an A320 captain in 2002, but due to a reduction of flying and staffing, he returned to A320 first officer (FO), and then upgraded back to A320 captain again in 2012. He did not know who the accident pilots were, and said he knew very little about the accident and crew.

When asked how the Airbus was integrated into USAirways operations initially, he said he was supervisor of flight training and standards at that time and his job was not specific to the A320 fleet, but he was involved in standardization of procedures across all the fleets.

When asked about the decision to use 80 knots as a high speed low speed regime figure, he said they looked at what the manufacturer provided in their documentation, and industry and FAA documentation. They looked at regulatory material and other FAA guidance such as 8900 guidance, the AIM , and training aids such as the takeoff safety training and upset recovery training aids. Training was looked at, and they tried to standardize across fleets to minimize differences when pilots transitioned from one airplane to another.

Airbus reject criteria was close to what they already had at USAirways, and they also compared it to the FAA takeoff safety training aid. Airbus, Boeing and industry worked at creating the takeoff safety training aid. They used that in detail as they worked to develop their procedures across all fleets. Each fleet was then looked at to see that there was not anything they were developing that was contradictory.

One thing reviewed was the definition of low/high speed regime and the takeoff training aid referenced 80 knots, and in some cases it mentioned 100 knots. Boeing and Embraer both used 80 knots. They also looked at the airplane itself. Some things in the more modern aircraft were removed – inhibited warnings at certain speeds to ensure the reject was accomplished safely. Both Boeing and Airbus had inhibited warnings beginning at 80 knots. USAirways chose 80 knots, and he said they knew that Airbus picked 100 knots, but it was not an important or mandatory speed. Airbus just needed to pick a speed for high and low speed regime. Across their fleets, their criteria were very similar, with differences coming from the manufacturer by itself.

They had always done a risk assessment on changes to procedures, but it may have been done differently in the past. Today they were level 4 SMS (Safety Management System), and items were documented, and it was a very defined process. The documentation process was not there in the past. Whenever they discussed items, they thoroughly vet them.

They had a flight operations standards board (FOSB), and that was the only group that could make the decision like the 80 knots reject speed. It included the Vice President of Flight Operations, Managing Director of Operations Safety, Regional Director of Phoenix (chief pilot), International Regional Director in Philadelphia who was a chief pilot, Director of Safety and Regulatory Compliance, Managing Director of Flight Training and Standards, fleet captains from the Boeing, Airbus and Embraer fleets, himself, and Managing Director of Flight Operations Policies and Procedures. The FOSB also had two advisory members, and if something came to a vote, they did not vote. Those individuals were the POI and VP of Safety and Regulatory Compliance. The FOSB met monthly.

When asked if the decision to use 80 knots on the reject was discussed with Airbus, he said their current procedure was called a "creation maintenance and revision process." They looked at current manufacturer and FAA documentation. When they put the information together, they attempted to comply with manufacturer guidance, unless the FOSB believed there were safety differences in their fleets. They would then go to the manufacturer to see if they concurred. He could not recall if that process was in place at the time of the Airbus fleet launch at USAirways. Their corporate archiving procedures were to maintain documents for 3 years. It was his responsibility to keep minutes from FOSB, and it only went back 3 years. At the time of the launch of the Airbus, the fleet captain was Tracy Barnett.

He learned about the retard alert on takeoff "just recently," and it was in regards to this accident, and it was just conversation and nothing official. He thought there was some formal information that came out about the retard alert. He was not familiar with a reject from the June 2013 event that involved a retard alert on takeoff. He had not seen anything from Airbus talking about a retard alert on takeoff. He only knew of a retard alert that occurred on landing. He had never been trained on a retard alert on takeoff.

Guidance material from Airbus would go to the fleet specialist, and they subscribed to that information. FCOM changes and documentation was sent to the fleet captains. He knew fleet captains would get it, but he could not speak for safety. Fleet specialists worked for him, and the fleet specialists would bring information to him when necessary. He did not get any information regarding the retard alert on takeoff. Had he got that information, the first thing he would have done was to bring that to the FOSB meeting and discuss it. If there was a need to do a safety risk analysis, they would look to see if they needed to modify procedures. Safety did share their information if they had it. The two formal avenues were the FOSB, which included safety and the other group was flight data analysis group (FDAG), and they were with the flight department responsible to analyze all input they got like ASAP, FOQA, pilot proficiency data base, and FIRs (flight irregularity reports). That group reviewed the data on a monthly basis, and they would bring recommendations to the FOSB. The manager of ASAP and FOQA representative was included, as well as anything they saw from AQP documentation.

FOSB also got information from safety investigations, and those were brought up in the FDAG since safety was a part of those groups. The fleet or flight department was responsible for communicating with Airbus. He had in the past gone to Airbus to discuss global issues, not specific to the Airbus 320, to get their guidance and input, like windshear or rejected takeoff. He did not remember going to Airbus specifically for rejects, but that was an example of what he might go to them to talk about.

He knew of no changes to reject procedures since the accident. They did have some changes to checklist items. In the recent past they had reports from safety on altitude deviations and navigational errors, and the trend appeared to the on the increase. They looked at data for altitude deviations and saw that it was due to optimum profile descents and their complexities.

For navigational errors, they saw that they were related to FMS entries at the gate. They made some procedural changes that included an ATC (air traffic control) route verification procedure to standardize how to enter that information into the FMS, and check it with both crewmembers.

They found on international operations they would rarely see navigational errors attributed to preflight procedures, and took that as the model. There was a higher level of awareness of the importance in international operations, and they mirrored those procedures for all airplanes. The PF would take the clearance and enter it into the FMS. When done, the other pilot would verify it. The pilot entering data in the FMS would not look at the FMS, and would read from the clearances, while the other pilot would read from the FMS. These fleet-wide changes to the procedures were done a couple of years ago. Both pilots would be brought in to check that the FMS entries matched the paperwork. It would not have been a new procedure to the Philadelphia accident crew.

Another thing they did was look at the departure briefing. On the back of the checklist, they typed out departure briefings and arrival briefings. Crew religiously used this. They already had a taxi route briefing, and expanded on it to say that what they briefed could change. That was for the taxi route. It also had a briefing for takeoff reject considerations. Based on the Lexington accident, they added a step for crews to make sure they were doing a check of the correct runway. About that time, RNAV departures were becoming prevalent enough to make sure pilots checked the FMS departure. They added a checklist item called "runway and FMS, verify, and runway (blank) checked." He would always do a runway verification as part of the route verification as part of his own technique.

He had never experienced a situation where he did not have V-speeds on takeoff, and "I wouldn't dream of taking off without V-speeds." He flew Boeings prior and could get away with certain things, but in an Airbus, you made sure that the automation was programmed. The automation on the Airbus was spectacular but the airplane did not like it when it was not used like it wanted you to. On a Boeing you could look through the automation, but on the Airbus you had to make sure you were at the right level of automation. They clearly went over the four levels of automation in training. They made sure crews were aware of the levels of automation and what level they should be at any particular moment.

When asked if the lack of V-speeds on a takeoff was a consideration for discontinuing the takeoff, he said "absolutely." When asked if an aural retard alert at 80 knots would be a consideration to reject a takeoff, he said it was very subjective, but if he got that alert, he would reject since it was a low enough speed, and he would want to find out why they got the alert.

When asked if there were varying levels of high speed regime to determine what to reject for, he said in his experience, they went into the criticality of V1 the closer you got to V1. Even though they had 80 knots, it was just a divider, and there were multiple things to consider, like runway length or the proximity to the V1 call. They had verbiage that as you got closer to V1, the decision was more weighted to the go decision, because an RTO (rejected takeoff) close to V1 was more likely to result in overruns.

He was not sure his total left/right seat time in the Airbus. Because of his management experience, his time on the line was not high.

He said that USAirways was fortunate that for many years, they had an ALPA human factors expert, Robert Sumwalt, and he was instrumental in developing TEM (threat and error management) procedures and policies, and he (Captain Thomas) was proud of those.

The interview concluded at 1202.

11.0 Interview: Bruce Anderson, USAirways A320 Standards Check Airman

Date: June 3, 2014
Location: USAirways Training Center, Charlotte, NC
Time: 1400 EDT
Present were: David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA) – via phone; Lori Cline – USAirways; John Sabel – US Airline Pilot Association (USAPA)
Representative: Captain Anderson was represented by Larry Rooney - USAPA.

During the interview, Captain Anderson stated the following:

His name was Robert Bruce Anderson, and he was 64 years old. His title was Chairman of the Standards Committee for USAirways on the Airbus, and he had been in that position for about two years. The committee had about eight members representing the A320 east, A320 west, and A330 fleets. His roles and responsibilities were to ensure the standardization of check airman and instructor pilots, and to assign tasks to the six A320 check airmen. His supervisor was John Hope. He was also an aircrew program designee (APD) and a check airman, and had been a check airman on the A320 since 1998. Previously, he was a check airman on the F100 for 4-5 years, and had also been a regular line captain for 5 years prior to becoming a check airman. He had also flown as a first officer (FO) on multiple aircraft types, and previously flew as an A7 pilot and instructor in the Navy.

He held an ATP certificate with a type rating on the A320, DC9, B737, F100, and N265. He also held a first class medical certificate with no limitations. He estimated his total flight time at 15,000 hours, with about 10,000 hours as pilot in command (PIC). He was current in the A320, and he flew one 3-day trip every month. He did not fly rotations, just for currency. With the AA merger, he would have the ability to rotate flying. The contract said he must fly 73 hours per year and he could do that in 1 month or across 12 months.

The structure of the standards department for the Airbus consisted of six standards check airmen who were responsible for observing check airmen three times a year – twice in the simulator and once on the line, preferably when conducting OE, in order to ensure standardization. He did not observe ground school events, however APDs reported to him if any issues occurred with the ground school program.

He did not know the accident pilots, but did remember one occasion when he bought "compression socks" from the FO in the crew room. He had not flown with or observed the accident crew in the simulator or on the line and did not review their training files. He had never

heard anything about them, and never heard any complaints from other pilots or instructors regarding the accident crew.

Since the accident, he did not know of any training or procedural changes from the standards department at USAirways related to the accident. The Standards Committee had previously recommended changes on other topics, usually once a year, and generally he felt he was "fairly proactive" with giving his input. Initial and continuing qualification training (CQT) usually consisted of a runway change to see how pilots handled task-loading, and he thought that it was trained specifically in a SPOT in 2009. He remembered a specific simulator event last year that included a runway change during taxi out in Las Vegas (KLAS) that required the crew to change runways to the other parallel runway. The runway change scenario occurred "above the line" on the checklist, sometime after the simulator crew loaded the data, but prior to arriving at the originally assigned runway.

Depending on the situation, the pilot monitoring (PM) would usually be the one to change the runway in the FMGC ; if taxiing, it would probably be the FO who would change it. It required the pilot to select line 1L on the FMGC, enter in the new runway, change the standard instrument departure (SID), and check the data to ensure that the correct Vspeeds were stored. In the previous version of the flight management system (FMS), called FMS1, all the takeoff data was kicked out during a runway change. However, in 2009 when USAirways switched to the latest FMS, version FMS2, all the Vspeeds migrated to the right of the entry box, which only required the pilot to confirm them, or manually enter them if required. They would check the speeds against the weight and balance or takeoff performance system (TPS). Pilots received a bulletin about the changes from FMS1 to FMS2 and were trained on the differences in their next CQT.

It was not required to rerun a checklist after a runway change, but pilots were trained to discuss the change. The Standards Committee had no plans to redo the checklists to require pilots to rerun the checklists after a runway change. The procedures for loading the FMS were spelled out in the Pilot Operating Handbook (POH) under the preflight tab.

Pilots at USAirways were trained using the threat error management (TEM) model to avoid interruption during a checklist or flow. If a pilot got interrupted during a flow, they were taught to start over per standard policy. If a pilot got interrupted while running a checklist, he would say hold the checklist, but that was his technique. The policy was not to get interrupted. Many maneuvers and training scenarios were based upon data derived from the FOQA program.

The pilot flying (PF) was responsible for loading the FMGC. After the FMGC was loaded and after the clearance was received, the pilot who entered the data must complete the route verification and would hold the paperwork. This was done by reviewing the paper flight plan and clearance with the other pilot who would verify the planned runway, SID, and fixes on the flight plan page of the FMGS. Standard operating procedures (SOPs) stated that the FO was responsible for retrieving the ATIS and the clearance.

The PF performed the departure briefing, which occurred before or after the before start flow, but optimally before. During taxi out, the FO was responsible for a runway change in the FMGC, but both pilots were responsible for verifying that it was correct. This also included verifying

takeoff data, as well as Vspeeds. Pilots were supposed to do the below the line 1-3 minutes before being cleared to take the runway. If the checklist items "below the line" were completed, and the crew discovered an error in the FMGC, he would expect a pilot to stop "instead of being rushed" as an additional barrier in TEM and to avoid runway incursions.

He said that crews were given the "thrust levers not set" electronic centralized aircraft monitor (ECAM) message multiple times during initial simulator training events, but could not remember if it was given in recurrent simulator events. Pilots got an oral every continuing qualification line operational evaluation (CLO) and it might be one of those questions. This message meant that the thrust levers were not in the proper detent, usually related to the "flex temperature" not being set correctly. Crews were taught as a standard procedure to go to TOGA (takeoff/go around) power if that ECAM occurred. They had multiple ECAMs like "thrust levers not set" in which a crew would perform the ECAM action without referencing the QRH. That was why they put the "thrust levers not set" procedure in the book.

He had never heard the "retard" aural alert during a takeoff. He had experience doing aircraft acceptance checks, and had done at least 40 test flights with Airbus representatives. Out of all those different test flights, which included many different scenarios, he had never heard of it happening, and had never been told about it from an Airbus test pilot. He had never seen anything like a safety alert from the USAirways Safety Department regarding this. Pilots were not trained to handle a "retard" alert at 80 knots, and he thought it might be because no one knew about it. He did not hear about the retard alert on takeoff until after the accident.

When asked of his expectations of a pilot if they received the "retard" alert at or above 80 knots, he said he expected pilots to reject the takeoff and "figure out what was going on." At speeds higher than 80 knots, he said that pilots were encouraged to "go towards flying the airplane, but that does not mean that you cannot reject." Below 80 knots, pilots were taught to reject for anything. Past 80 knots, which was used as the "cutoff" to reject or continue and fly, but 80 knots was not fast. By the book, crews were encouraged towards flying the airplane, except for a fire, failure, major warning, or perception that the airplane would not fly. The "retard" alert on takeoff would not be considered a major warning like a fire. If the airplane was accelerating down the runway well, he could see a pilot continuing the takeoff. There were a lot of cues telling them the airplane would fly. If he was concerned at all, he would go to TOGA but he could not recall getting into that scenario, though he had experience with a "thrust not set" on a test flight. When asked what "perception that the airplane will not fly" meant to him, he gave the scenario of windshear in the simulator. He said that he gave some crews windshear in the simulator that caused airspeed stagnation, which gave some crews the perception that the airplane would not fly. The crew could reference the airspeed trend arrow and should see a good trend arrow at 80 knots. There was no training after takeoff regarding perception that the airplane would not fly, but he gave crews a catastrophic engine failure at V2, in which crews were able to "fly away from it very well most of the time – actually, all of the time." Nothing was given in training that would be an example of an airplane not flying.

The captain usually called for a reject on takeoff, but FOs were allowed to call for it if the situation required, such as a captain incapacitation, which was trained in the simulator. He said that there was some discretion allowed for a rejected takeoff above 80 knots, but "the faster you

go, the less things you would want to reject for." The "retard" aural alert was an anomoly, and not an inhibited feature.

He said that he had never seen a situation where takeoff Vspeeds were not set. He would expect a crew to abort the takeoff if they noticed that they did not have the speeds set, even above 80 knots, unless they could remember the exact speeds that were briefed before departure and this should be verbalized. It was not trained to takeoff without any Vspeeds, and it had not been demonstrated in training events.

He was not aware of any flight operations briefing notes that Airbus may have sent to USAirways. The only flight operations briefing notes that he had seen from Airbus were in response to questions that he had sent to them. In his opinion, Airbus was not proactive in sending operators any flight operations briefing notes.

He was aware that Airbus' high speed regime delineation was 100 knots. He said that Airbus had no technical objections to American Airlines using 80 knots as their high speed regime cutoff, which was done to "keep all the fleets the same." He thought that the 100 knots was an arbitrary number.

During simulator training, all pilots went to TOGA after receiving the "thrust levers not set" ECAM.

Documentation of comments from training were discarded after the grades were entered into the system. Reason codes were required of grades 3 and 2, and giving a grade of 1 was very rare.

He thought it was procedure to talk about the runway during the route verification. While it did not specifically say to verify the runway, it was alluded to because the runway was needed to load the FMS properly.

He was not aware of a list of ECAMs that did not require performing the normal methodology for completion of the ECAM.

They tried to limit the things pilots rejected for above 80 knots and could not train for all scenarios, but if it was in the pilot's judgment that he thinks it best to reject the takeoff, then reject.

They did not train pilots to discontinue a takeoff after the airplane lifted off the runway.

Single-engine taxiing did not change the procedures for "below the line" checklist items prior to takeoff. Pilots were required to manage tasks appropriately, ensuring that everything had been completed at the appropriate time.

Interview concluded at 1533.

12.0 Interviewee: Bruce Galleron – Director of Flight, Charlotte, NC (CLT)

Date/Time: June 3, 2014, 1100 EDT
Location: USAirways Training Center, Charlotte, NC
Present: David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA) – via phone; Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Captain Galleron declined representation.

During the interview, Captain Galleron stated the following:

His full name was Bruce Lee Galleron and he was 61 years old. His current title was Director of Flight in CLT and he had been in that position for 2.5 years. His roles and responsibilities were to oversee 8 people in the office (2 chief pilots and 6 administrative staff) and 1446 pilots, and to interface with the CLT hub from maintenance to customer service to ramp service to corporate security.

He had an ATP and was type rated on the B737, A320, Learjet, and F100. He had a first class medical with a limitation of must wear eye glasses on the flight deck. He had about 21,000 hours total time, and 16-17,000 hours as PIC. He was current on the A320 and maintained currency doing landings in the simulator. He could go out on the line and tried to get out as often as he could, but he thought it had been about 6 months since he had been out on the line. In his current position, it was hard for him to get on the line. Before his current position, he was a senior check airman on the Airbus, a check airman on the Airbus, a check airman on the BAe146, and a line pilot on the B737 for about 3 weeks.

The chief pilot's office was structured such that he was the top person. Below him were two chief pilots, then a base manager, then an aeromedical person (Karen Hill), and an administrative person.

The training and standards departments talked a lot before the merger. When there was an issue they would go straight to that department because they were the experts. The process was different now. The chief pilot's office used to have disciplinary meetings with pilots. Under American, they had "section 21" meetings now where the fleet captain would sit down with the pilots first and do their investigation before the chief pilot's office got involved.

He did not know the accident FO at the time of the accident but had since met her. He knew the accident captain casually from the crew room. He had never flown with either one of them.

There was nothing of note on either of the accident crewmembers' files. They were both very good employees who showed up for work. The accident FO lived near CLT and the accident captain lived in Florida. They had no letters of disciplinary actions and no issues with sick calls. If there was any issue it was that sitting reserve and trying to commute from Florida could be problematic. He had previously talked to the captain once or twice about not being available when called for reserve. No pilots mentioned any concerns about flying with the accident crew.

He saw the accident captain the morning of the accident in the CLT crew room. The captain wanted to know whether he was getting a crew meal on any of his flights. Capt. Galleron showed him where to find out on the computer.

He told pilots if they had an issue with another pilot to go to professional standards first. If they could not resolve it, then come to him. He had not had any one come to him about the accident crew. Pilots could also send him an email if they had a concern about another pilot. There was no way for a pilot to report a concern and remain unidentified.

He was alerted of the accident by his boss who asked him if he was aware of it. Capt. Galleron was almost home and he jumped on the computer to see which pilots were involved. He called Mark Cronin who was the director of flight in PHL who was trying to get to the accident site to get the crew in a van. Capt. Galleron tried to call both crewmembers and about 25 minutes after he got home, he got ahold of the accident captain. He spoke to the captain who said the crew and passengers were fine. The captain volunteered a little information about the accident and said the airplane felt "mushy" and would not fly, so he put it back down.

Since the accident, he had talked to the accident captain a couple of times and the FO once. The accident FO had an issue with her pay that he helped to get resolved. He spoke to the captain about needing copies of the paperwork sent to the captain from the FAA. The captain told him that it was hard for him and he kept running the accident scenario through his mind.

The company was going to start an internal investigation in mid-June related to the accident. They did a small portion of the investigation already and had a hearing with the crewmembers just to see how they were doing. He wanted to also find out if they were fatigued or rushed at the gate or during push back. Both crewmembers said no. The crew did not get any food in PHL that would have rushed them. The FO said she loaded the FMGC. Neither of the crewmembers remembered when they got the weight and balance. They said they did a single engine taxi and it was a long taxi, and the captain said they were not rushed but before they took the runway that time was compressed. The captain told him when they did below the line items to verify the runway, they trapped the error, and realized they had the incorrect runway in the FMGC. The FO said she did not remember the note in the scratch pad to check the takeoff data.

He was not a part of the ERC. He heard that the FO was in the ASAP program and the captain was questionable.

He was not aware of any medical conditions of either pilot.

He was not aware of a newsletter put out by any of the legacy USAirways chief pilot offices, but said American chief pilot in PHL had put out a newsletter. He was not sure why they had not done it at USAirways but said there was only so much time in a day and they had 1446 pilots. If he did put out a safety letter, it would touch upon safety issues, what they were experiencing safety wise on the line, the intermixing of airplanes and to make sure switches were in the proper position on west versus east airplanes, FAR part 117 and fatigue, changes on the ramp in CLT such as different lead-in lines; it would all be geared towards safety.

Since he took over as the chief pilot, he spent a lot of time in the crew room. They had a culture that needed change about three years ago; he might call it discontent. He spent a majority of his time in the crew room for the first 2 years. Pilots were upset about losing their retirement, pay cuts, and the like following the merger with America West. The pilots still had issues regarding seniority since the merger but labor relations now were very good. It was 180 degrees from what they had before. USAPA had helped a lot.

He never heard the aural retard alert on takeoff, and never heard of it ever happening. He heard one pilot say they did not have v-speeds on takeoff which was noticed when it was time to call V1. The crew went to TOGA. The PM looked at the shadow speeds in the FMGC for Vr. They took off and everything came back to normal at 1,000 feet. The pilots filed an ASAP report.

He was not aware if going to TOGA was the procedure if a crew did not have V-speeds on takeoff. His expectation would be to reject if he received an aural "retard" alert.

If a crew got the retard alert on takeoff, he would think they would reject and get off the runway. The retard would probably occur between 82-84 knots. He knew that they only rejected for certain things, which he could not recall them all at the time, above 80 knots, but he would reject for the retard alert above 80 knots. Most reports received regarding rejects said it was performed at 80 knots and he thought it was because a pilot would distinguish 78 knots or 82 knots from 80 knots.

Asked if he would reject for anything after 80 knots other than engine failure, engine fire, catastrophic failure or the airplane would not fly, he said every circumstance was different. They trained to those reject criteria above 80 knots.

He had not heard from any pilots that they got a thrust not set ECAM during takeoff. If a pilot asked him what to do in that circumstance, he would tell them to go to TOGA.

His greatest challenge as chief pilot in CLT was to make sure all pilots were safe and to keep the pilot group focused on the task at hand which was flying the airplane. They had all of these external things going on around them and they needed to keep focused. That was why the chief pilots spent a lot of time in the crew room.

Asked if he would reject for an ECAM after 80 knots, he said it would depend. It would take "a strong FO" to determine what the ECAM was, for instance a cargo door light that may require a reject.

If the captain was incapacitated, the FO would have to call for the reject. If he was an FO and was uncomfortable with a takeoff, he would bring it to the captain's attention.

He did not know who maintained the avoidance bid system.

Karen Hill had been in her position in the aeromedical department since December 9, 2013. Everything was run through aeromedical now. The union thought the chief pilots should not know about any medical issues a pilot had. Her position was in Dallas. He thought he could get

access to those records through HR but he probably would not exercise that. He needed to know some information because if a pilot was out for 14 days or longer, the pilot's status would change. He deals with the scheduling and would need to take them off the schedule.

He saw the accident captain the morning of the flight about 0910. The captain wanted to know what legs he would have a crew meal on, which was the flight from PHL to FLL. The captain did not mention his commute to CLT that morning. Asked if the captain looked fatigued, he said the captain had an even personality and Capt. Galleron would not know if he was tired or not. The captain was not very excitable, and was very outgoing.

The FAA paperwork that Capt. Galleron requested from the captain following the accident was the letter of investigation. The captain was required by the FOM to notify the chief pilot's office within 3 days of receiving the letter. Capt. Galleron called the captain a second time asking him to submit his letter from the FAA about his 709 ride.

He was not made aware if a pilot was flying on a medical waiver.

He was not directly involved with changes to training but said if there was an issue on the line he would forward that to training and standards.

He had not had a safety meeting with the pilots since being in his position. He did hold ATC meetings every month between the pilots and controllers at the CLT tower. They usually discussed arrival and departure issues.

If a pilot needed to call in fatigued, he could call scheduling or call him. The pilot would have to fill out a fatigue report. With the new AA process, the report would be reviewed to dictate whether the pilot would be paid or not. Pilots were told about this new process through a CBS message and some information was distributed by USAPA. There was no review of fatigue reports before the merger. Pilots would not get paid for calling in fatigued and it did not come out of their sick bank. He would get a copy of a report completed by the scheduling department after the fatigue call but the chief pilot would not contact the pilot for a fatigue call. If he saw a pilot had multiple fatigue calls, he would follow up with that pilot.

There had not been any discussions regarding changes to training or procedures since the accident. There were a lot of questions surrounding the accident.

Some pilots did not fill out a fatigue report, but usually pilots did. If a pilot did not complete the report, scheduling would call them and ask them to fill it out and they would. The chief pilot did not monitor fatigue reports.

The crew that told him they had no V-speeds on takeoff occurred about 3 years before this accident.

The purpose of the section 21 hearing was to gather facts. This accident was not sole source. They were not privy to FDR, CVR, FAA or NTSB information, so they had to gather their own facts. Section 21 was an AA term. They did a preliminary hearing and could go back and do it

again. He led the section 21 hearing with the accident crew. The information gathered was given to USAPA. Everyone from his boss and up were privy to the information from the hearing. Flight training and standards was not privy to it and they had not shared the information with the FAA. During the hearing there was one person present to take notes and two others. There had been no corrective action from the hearing yet.

The crew that departed with no V-speeds did not get the aural retard alert, but said they would not have gotten it if they were in a TOGA takeoff.

If a pilot would be out for a few days, that information went directly to the aeromedical department. The pilot would usually be proactive and tell the chief pilot's office. The chief pilot's office was not getting communications back from aeromedical.

He did not recall how or when he became aware of the accident captain's medical waiver. He became aware of the FAA letters that the captain received by hearsay.

USAirways trained the captain to keep his hands on the thrust levers until V1. They also trained for high speed rejects between 80 knots and V1.

He said "I would say pilots had seen 'thrust not set' in training before."

The interview concluded at 1200.

13.0 Interview: Charles Boswell, USAirways CLT Assistant Chief Pilot

Date: June 3, 2014
Location: CLT Training Center
Time: 0930 EDT
Present were: David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA) – via phone; Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Captain Boswell declined representation.

During the interview, Captain Boswell stated the following:

His name was Charles Evans Boswell III, and he was 55 years old. His title was Charlotte, NC (CLT) Chief Pilot and he had been in that position for two and half years. His responsibilities were to monitor pilot performance, appearance and the reliability of about 1500 pilots in the CLT base. He shared those responsibilities with two other chief pilots. Collectively they oversaw all 1500 pilots in CLT, and there was no block of pilots assigned to each chief pilot. They usually worked Monday through Friday during normal business hours, and sometimes one chief pilot would have an outside project so there would only be two available, and rarely would there only be one chief pilot available. On weekends, the chief pilots were available 24-7 by phone.

He held an ATP pilot license with type ratings on the IA Jet (Westwind), F28, B737, A320, and the DC9. He was originally hired by Piedmont Airlines prior to the merger with USAirways. He

held a first class medical certificate with a limitation of needs glasses for near vision. He was current on the B737, and both the other two chief pilots were current on the A320. He estimated his total flight time at about 23,000 hours, with about 22,000 hours as pilot in command (PIC). He was required to fly 150 hours a year per American Airlines (AA) policy. Previously, the USAirways policy was for chief pilots to fly twice every 90 days for currency, and it was up to the chief pilot to maintain his currency in the simulator or through trip buys.

He previously was in the training department as a standards check airman on the B737 for 5-6 years, and in January 2012 he was asked to become an assistant chief pilot. Previous to Piedmont Airlines, he was a corporate pilot. He was a captain on the F28 but was not a check airman.

The structure of the chief pilot's office was changed on December 9, 2013, due to the merger with AA. Prior to the merger, there was one chief pilot who was defined as the regional director of CLT, and he had two assistant chief pilots to assist him. The assistant chief pilot's duties were to back up the regional director, who made the operational decisions for the base, and to serve as the chief pilot in the director's absence. They were also assigned different projects to accomplish. As of December 9, 2013, they adopted the AA procedures, and now had 3 chief pilots and no more assistant chief pilots. One chief pilot additionally assumed the duties of the former regional director that included management and administrative roles. Everyone's roles had shifted with more authority and accountability. It was not necessarily more work since they were working "at the same speed" and "you never get done, the phone's always ringing." There was more accountability with the new policy. Before the changes, Bruce Galleron would take the responsibility for decisions, but now they all shared that role.

When asked about the chief pilot's office relationship with the training and standards department, he said they were both within flight operations but had two different roles. They worked together, but "we don't step on each other's toes." The chief pilots understood their role, and could make recommendations for change. Line check airmen did not report to the chief pilots, and reported to training and standards.

He did not know either accident pilot, but recognized their faces when he pulled up their ID pictures. He could not remember if he had ever spoken to either pilot. He had never flown with either pilot. The chief pilots had limited records available to them regarding the accident crew. It included their personnel files, and he had not reviewed them. They had a Catcrew computer system that contained correspondence about the pilots. He reviewed those, and noted that the captain had a "no contact" back in 2012 when he was on reserve that he was counseled for, and that was the only thing in his record. The accident first officer (FO) had a "no-show" in June 2012, and that was the only event in her record. He said "no-shows" were pretty serious events since they could potentially delay a flight, and considered a "one-off" not alarming. He thought it was bound to happen if a pilot commuted or sat reserve long enough and most pilots would have at least one. He did not see anything else in their records that concerned him regarding pilot reliability.

He had never heard anyone complain about either pilot. Line pilots could always come into the chief pilot's office to submit concerns about a pilot, and usually those were personality conflicts, and they would facilitate trying to keep those pilots from flying together. USAirways pilots had

an avoid bid system available to them where first officers could enter a captain's employee number to avoid flying with him. The chief pilot's office did not monitor avoid bids and to his knowledge no one monitored them. There could be different reasons why a pilot would not want to fly with another pilot. He said it was very rare for someone to complain about another pilot, and the pilots had a union professional standards committee to handle conflicts.

He was notified of the accident by a dispatch report concerning an irregularity in the operations. The first question he asked was if the pilots were CLT based. The report was sent to the CLT chief pilots, and included airplane, airport, flight information and the basics of what was known. They had an emergency response network, but that did not occur that day since the first indications were the event was an incident and not an accident. He believed he was off duty at the time of the accident so the other two chief pilots were actively engaged in how to handle the situation. There may have been a discussion about the accident between the chief pilots, but he could not remember. The pilots were immediately pulled from the line with pay as the investigation began. The USAirways investigation into the accident was still on-going, and both pilots had filed ASAP reports.

He said he was not involved in the ASAP process, and was not a part of the event review committee (ERC). He said USAPA put the pilots in the ASAP program if they qualify, and the company historically did their own investigation by asking the pilots what happened. In this case, he was not a part of the process.

He was not aware of the captain's medical condition. Pilots were required to submit their medical certificates with limitations to the company every 6 months, and those were sent to the pilot records department. There was no scrutiny that he knew of for the medical limitations. They [chief pilots] did not review those. He said the role of the company was to assume that the AME monitored their pilot's medical limitations, and it was the pilot's personal responsibility to maintain their qualifications. AA had their own medical department. He was not sure if that would change with the merger.

He maintained contact with the pilots in CLT as he walked in to the airport every morning, and would stop by the gates. He tried to be accessible, shaking hands and answering questions. The chief pilots were out of the office 40% of the day, and pilots were also encouraged to call them. He said "the door is always open" and his cell phone number was on his business card.

They did not have base meetings with the pilots, and they would occasionally put a CBS (crew broadcast system) message out to the pilots when the necessity arose, which might also show on their scheduling program when the pilots logged in. They also put out safety messages. They sent one CBS message out following the accident, but he could not recall the details. There had been no recent issues that the CLT chief pilots had needed to send to the pilots. They were going through an RC3 revision process, and on June 11, 2014, they would be adopting more of the AA procedures until the SOC (single operating certificate). Everyone was a little resistant to change but after they did the changes for a couple of months it became the norm.

When asked about pilot labor relations at USAirways, he said they just started integrating the east/west aircraft, with some east pilots flying west airplanes and vice versa, and there had been a

division on seniority rights. There was some speculation on some things happening on the airplanes that pilots attributed to the other pilots from either the east or west that seemed to "add fuel to the fire", but he did not see any issues. They recently put out a CBS message telling pilots to contact them with issues, but he did not see anything safety related.

He said his greatest challenge as chief pilot in CLT was to effect change in a way that was constructive and positive. He also said the hours as a chief pilot were long and pretty fatiguing.

There was a USAPA professional standards committee that was a very good option to handle conflicts between pilots outside the chief pilot's office, and that had been very helpful. The pilot group had been "invigorated lately" with the merger, and professional standards was not used that much by pilots and management 2 and a half years ago. AA really used their professional standards committee to affect change, and USAirways had started using them more to affect change through peer pressure.

There were no training records retained in the chief pilot's office.

To become a captain, pilots must have an ATP and pass rigorous initial training. Pilots at USAirways upgraded to captain based on seniority. It was not merit based, and pilots would bid it then if selected must meet the standards when they went through training and on the line.

A pilot would call fatigue by calling crew scheduling, and would then he would be removed from the trip. He said fatigue calls "don't really come back to my office." Sometimes pilots would come into the chief pilot's office and tell them why they called fatigue. The pilot would complete a fatigue report. He said there was a new fatigue process at AA. Fatigue calls went through a review process. A fatigue committee reviewed the fatigue call to determine the cause of the event. They reviewed it to see if the pilot got paid or not. If the fatigue was pilot induced, he probably would not get paid. The chief pilot did not get a report on what the committee did.

Since the accident, he was not involved in any discussions regarding training or procedural changes.

If a pilot did not fill out a fatigue report, they would not be aware of the fatigue call and a pilot would not be paid if he did not submit a fatigue report. He had not heard of a pilot refusing to fill out a fatigue report.

He did not have access to the avoidance bid results, and was not familiar with how he would get access to that. They system had been in place "forever." The chief pilots had never been involved in monitoring who was being avoided on the bid and why.

Pilots were trained for runway changes, and in his experience, he had seen pilots stop the airplane and set the parking brake to handle a runway change. For the last several years there had been an emphasis on task management or task loading. He thought the training had been very effective. They had not sent out any CBS messages regarding task saturation in the cockpit, only the CBS message regarding re-programming runway changes. The CBS message came out from the safety department, and not the chief pilot's office.

When he flew the line, he would buy trips, and would try and fly with regular line pilots to "get a read on what's going on out there." The last several times he went through recurrent training, he had a "seat filler" in the right seat. With the reduction of flying on the B737, seat filling during recurrent training was common.

The chief pilots had access to pilot sick calls. Prior to December 9, 2013, four sick events within 90 days would require a doctor's note from the pilot, but four sick calls over the last 12 months would not require a note. If a pilot was sick for more than 21 consecutive days, their illness would be required to be substantiated with a doctor's note. The AA policy was for a pilot calling off sick for more than 14 days. That would allow a pilot to draw on his long term sick bank. They had a short term sick bank of 60 hours a year, and a long term sick bank that accrued 5 hours each month for their entire career. It did not take long for the short term bank to be depleted. For the two accident pilots, the FO was sent a message in December 2012 that she had depleted her 60 hours of short term sick bank, which was not uncommon. If a pilot used up his sick bank by February, that would be a red flag. The captain had a sick event in November 2012 for an orthopedic issue, and the chief pilot's office asked him for a note since he may have been off for more than 21 days.

He had not spoken to either pilot since the accident. Neither pilot had a record of disciplinary problems.

The new fatigue policy of AA required a fatigue call to go before a review committee, which looked at the root cause of the fatigue call. The AA policy was more formalized. The USAirways policy was to never question a fatigue call, but there was no remedy for a pilot to be paid for a fatigue call. AA realized that sometimes there could be an issue with the fatigue call that was company induced and the new policy offered the ability to get paid if that was the case. The idea was to look at it to see if there was something that could have prevented the fatigue call, and gather more detail on the call.

He said Catcrew records went back 3 years for review.

Interview concluded at 1025.

14.0 Interviewee: John Duncan, American Airlines Director of Flight Training and Standards

Date/Time: June 3, 2014, 1545
Location: USAirways Training Center, Charlotte, NC
Present David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA) – via phone; Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: First Officer (FO) Duncan declined representation.

During the interview, FO Duncan stated the following:

His full name was John Charles Duncan and he was 51 years old. His current title was Director of Standards – Flight Training and Standards at American Airlines and he had been in that position for about 6 weeks. Prior to that he was the Manager of AQP at USAirways. He was also line qualified on the A330. His roles and responsibilities in his current position were to oversee the manager of AQP which included human factors; the flight test group in the flight test organization for non-routine flight operations; the day-to-day operations of the CLT training center; and standardization of training program across the eight fleet types.

He had been the manager of AQP for 9 years. His total time was about 8,000 hours, of which about 4,000 hours were PIC. Other positions he held at USAirways included an instructor pilot on the A320 and B737 and a line pilot on numerous aircraft type. He had been with USAirways for about 26 years.

They had a visual TEM model that was developed and morphed over time. TEM was a 6th generation CRM concept. The model was developed by some researchers over time at USAirways and met the tenets of AC120-71. The model was a visual model to help simply complex human factors thoughts for pilots using three colors – red, yellow, green, and 4 letters – ABCs. The model helped pilots to communicate where they were in terms of situational awareness. Green meant things were going very well, you had the big picture and caught everything that was going on. Yellow meant you were more task saturated or task focused, and the potential for errors to go untrapped and for threats to go unnoticed increased. Red meant you had tunnel vision, missing things, making errors that were normally trapped and not assessing threats. They used an example of flying into LGA when traffic was very busy but the controller was able to make all of the calls and things were going like clockwork despite the task loading being very high versus the day when flying across the country and task loading was low and you realized you missed an ATC call. The point of the example was that sometimes task loading was low but radio calls were missed so that crew was not in the green.

The four letters were A – actively assess your situation for threats; B – balance barriers or layers of defense using Reason's Swiss cheese model. The first layer of defense was policies, procedures and flows, followed by checklists, automation, external resources (meaning anyone who supported the flight whether in flight or on the ground), and knowledge, skills and aircraft handling. All barriers had holes and the pilot flying and the pilot monitoring must employ barriers to cover the holes to prevent something from getting through all those barriers. Task loading was incorporated into that part of the model. C was for communication, a tenet of CRM, such as effective communicating, not hinting and hoping, and being assertive. S was for SOPs (standard operating procedures) and training discussed how crews who intentionally did not adhere to SOPs were more likely to make errors. The model has been updated over time. The model was going to be expanded in the near future which would include the risk (green, yellow and red) based on the phase of flight. Green would mean that the task load is such that only one pilot needs to be monitoring, yellow would mean both pilots need to be monitoring, and red would mean that both pilots need to be actively monitoring and all nonessential tasks put aside.

TEM was included in basic indoc training for new hires. They spent 4 hours dedicated to introducing the concept, both scenario-based and academically. TEM was then interspersed through training throughout a pilot's career. CQT included a TEM e-learning module then in

ground school pilots received a 2 hour break out from aircraft specific training to learn about TEM. It was IJT (integrated joint training) that included cabin crew and flight dispatchers. This was done in the CLT and Phoenix training centers. They would run a scenario with two pilots, three flight attendants and a dispatcher. All other trainees were observers. The pilots would talk to the dispatcher via phone line. The scenario would play out and then the whole class would debrief it. In the simulator, they had a 2 day footprint. Day 1 was maneuvers based and TEM was a part of that. There were four TEM posters that graphically describe the model and they were located in all classrooms and simulator briefing and debriefing rooms. Check airmen were expected to use a facilitated debrief based on the work of Key Dismukes. The crew was involved in the debrief using the crew self-discovery or self-critique method. The last SPOT event in training was targeted as a TEM SPOT and was based on data from the airline of what the threats the airline was seeing. The next day was LOE. It was a 2 leg LOE, gate to gate. The first leg had a simplex trigger like a system malfunction based on the current system cycle that was used to increase the crew's task loading. Other triggers would include crossing an active runway and needing to hold short (a runway incursion scenario), and TCAS was an issue currently being targeted. The first leg included threats based on data collected by the airline. The second leg departed the gate and had a complex trigger that always resulted in a return to field, diversion or go around and diversion. TEM was evaluated in that LOE phase and then there was a debriefing. TEM was also included in Qualification LOE and Qualification LOFT training.

Human factors issues were incorporated into TEM training. They did have a cadre of check airmen facilitators that they invested a lot of time in so that they could evaluate TEM and human factors. They had a 4 hour non-aircraft specific instructor-evaluation CQT. They tried to limit the class to 12-14 instructors but ideally wanted 10 instructors. The training was a facilitative 4-hour course based around TEM soft skills for the check airman to be able to evaluate.

Fatigue was a separate training module that included mitigation strategies, reporting, and items in their FRMP. They were in the process of transitioning to the AA fatigue risk management system (FRMS) which would be a part of the single operating certificate. Fatigue was incorporated in the TEM model in that they talked about crew factors or threats and fatigue was one of those.

Assertiveness was an element of communication. They trained not hinting and hoping and in indoc training they used examples from accidents, such as Western in Mexico City, when that had happened. If there was an issue, a pilot needed to have an opening, a statement of concern, propose a solution, and obtain agreement. Assertiveness was trained for the whole crew not just first officers.

He could not think of an area of TEM that pilots had difficulty with in training. They did see pilots use the TEM language in ASAP reports, such as we were in the yellow, and the language was used in the debriefs.

He was not aware of any discussions of changes to TEM since the accident but he had not been involved in the accident investigation at all.

The most active change to TEM was to break down the phase of flights, but this was occurring before the accident. It came from the active pilot monitoring working group chaired by NTSB Board Member Sumwalt and USAirways had a representative on that group, Ron Thomas, and Jay Pelicone from American. The purpose of the group was to look at enhancing pilot monitoring.

Internally, they had the flight data analysis group (FDAG) that had fleet specific representatives from the pilot association, safety committed, flight safety, flight operations, and the FAA assistant POI. The FDAG looked at data from FOQA, ASAP, training from line events and AQP events, and the training proficiency database. That group made recommendations or risk mitigations to issues they tracked on a watch list or concerns list. Recommendations could be to policies and procedures or to training. At the end of each AQP cycle, the group made recommendations for the next cycle's training objectives. The recommendations would go to the flight operations standards board consisting of senior management of flight operations. The POI was a non-voting member of that group. For the current cycle, there was a placeholder for merger related issues but also optimum profile descents.

He did not know the accident crew. He had not reviewed any of their records. He had an alternate responsibility of emergency response but at the time of the accident he had just gotten on an airplane and could not be involved.

As the AQP manager for 9 years, he was asked if he recalled any A320 trends. He said the FDAG kept a watch list of things from the flight operations standards board that needed to be looked into on a regular basis. The concept was that ASAP had its process, FOQA had its process, and AQP data was reviewed annually with the fleets. The idea was to bring all subject matter experts together to look at things globally and look at trends. The question was clarified to ask if he, as the AQP manager, saw any trends outside of the FDAG. Nothing stood out to him. They would look at the AQP data for the three lowest scores. He thought all data was reviewed as a group. Over time, they looked at NAV errors; 3 years ago they saw a rise in navigation errors on RNAV departures. A root cause analysis determined that the route error primarily occurred at the gate. They made a change to the procedures to use the same route verification procedures as used by the wide body fleets. That was built into the training the next year. He thought that was probably three training cycles ago. They saw a reduction in errors but he did not recall to what extent.

His biggest challenge in his role was the merger and trying to integrate two AQP programs. The USAirways pilots would be going from a 12 month/24 month cycle to a 9 month training interval. AA was on an 18 month (with a visit every 9 months)/36 month cycle. There were lots of intricate documentation to combine, training footprints looked different, and they had to get eight fleet types all marching in the same direction.

Regarding his counterpart at American Airlines, he worked with the former manager of training development who was now in charge of program development at AA who was responsible for development/production of content. FO Duncan was responsible for the content. They worked very closely together.

The integrated training with flight crews was part of dispatcher DRM training. When the SMS rule came out, USAirways elected to get into the pilot program with the FAA on the SMS rule. He was tapped initially to lead the project in flight operations to work with safety to build a model for SMS in flight operations. After attending SMS training, they realized that the pilot AQP program, being a data driven process, had some of the elements of an SMS system. They also wanted to bring FAs and dispatchers into the SMS program and also train under AQP. It was an 18-24 month project trying to fulfill both of those. As they looked at joint training with FAs in the classroom (it was not scenario based) which they had been doing for several years, they realized they did not use the same TEM model. They worked with researchers from NASA and the FAs to develop the TEM model for FAs. They also did this for the dispatchers which was more difficult because dispatchers did not work as a crew. Pilots, FAs and dispatchers all use a TEM model based on the same concepts. USAirways was the first airline to get approval for dispatcher AQP and for pilots, FAs and dispatcher AQP under one umbrella.

They did a joint training module when scheduling was possible. There were more FAs than pilots and more pilots than dispatchers so they could not train together all of the time but they did as much as they could. The joint scenario would be videotaped and played at the classes that were not conducted jointly.

SPOT training was based on data from the FDAG, which looked at FOQA, ASAP and AQP data.

Under TEM, pilots were trained to speak up and let the other crewmember know if they were in the yellow which would immediately signify to that crewmember your state. Asked if training was provided so that a crewmember would recognize that the other crewmember was in the yellow, he said pilots were trained to actively assess the situation and part of that would be assessing the other crewmember.

Scenarios were built in LOE and TEM SPOT training to specifically increase task loading during taxi out and different phases of flight so the evaluator can see how the crew handled that. After watching a lot of simulator events, he thought in most LOFT or LOE debriefings, task loading would come up because in every flight they flew there were phases that were really busy and phases that were not.

Every CLO during the second leg had a complex trigger (red). They used a “hub and spoke” – 3 inbound legs that the check airmen could choose from and every leg had a simplex trigger. Not all pilots would get the same scenario. And the evaluator would pick an outbound leg with a complex trigger that would require a return to the field or divert.

There was a spike in navigation errors when RNAV departures increased. They did a root cause analysis.

There was a development guide and the watch list where the data driven initiatives were. Each outbound scenario always had a runway incursion, a runway change and hold short instruction – a scenario where a crew could be evaluated on their ability to employ the barriers. He agreed when asked if crews would see scenarios that increased task loading frequently.

TEM was not graded separately because it was something they did every day and how they operated airplanes, not a separate concept. Unless at a specific trigger, they would grade at every phase of flight. They used a 5-point observation scale – 5 maneuver accomplished with no errors, 4 error occurred and was trapped, 3 error occurred and was not trapped but the safety margin was adequate, 2 error occurred and was not trapped but the safety margin was decreased, 1 significant error occurred and it was so significant that they could not remediate that same day. Any grade less than a 4 required an error code, such as aircraft handling or failure to assess the situation.

In a perfect world, he would like to see training scenarios that effectively simulate real world interactions in terms of ATC, FAs and dispatcher interactions.

The system required that the evaluator pick a reason for an error being untrapped. That data can then be reviewed to determine, for example, how many times a crew did not accurately assess a situation. There were a finite number of those that were set, like checklist not accomplished.

To ensure that check airmen were standardized in their grading, they had a performance enhancement program for the check airmen. It used to be a part of CQT but check airmen were feeling nervous coming in to training so the performance enhancement program was developed. They did two unannounced observations in the simulator and one on the line, preferably when the check airman was conducting OE (operating experience). The check airmen were graded on a similar 5-point grading scale on how they were performing as a check airman. Those observations go into an annual review process. Check airmen had a 4-hour CQT which also included a one-on-one evaluation with their manager. Part of the evaluation was a report that AQP provides on how that evaluator collected data during training. They could look at the data statistically to determine if that evaluator was always giving scores of 4 or above, or all 3s. If there were issues, the check airman would be counselled. That was the inter-rater reliability and looked at how they compared to their peers.

They also looked at referent rater reliability which was how they were doing in terms of all raters having the same understanding of ratings – one rater's 3 would be the same as another rater's 3. They used filmed scenarios with a referenced grade, and all check airmen would grade the scenarios individually and then their grade would be compared to the reference grade.

The interview concluded at 1648.

15.0 Interview: Paul Morell, Vice President of Safety

Date: June 3, 2014
Location: CLT Training Center
Time: 1245 EDT
Present were: David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Dennis Petry – Federal Aviation Administration (FAA) – via phone; Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA)
Representative: Captain Morell declined representation

During the interview, Captain Morell stated the following:

His name was Paul Leroy Morell, and he was 67 years old. His current title was Vice President of Safety, Security and Environmental for American Airlines (AA). He had been in that position for about 8 and a half years. Previously he served as Fleet Captain on the B757/767 and A330, and Director of Flight Training and Standards for USAirways. His roles and responsibilities included a flight operations safety role, responsibility over the FOQA and ASAP programs, accident investigations, and regulatory compliance. He also was responsible for the cabin, maintenance and dispatch ASAP programs. He also oversaw the Safety Management System (SMS) at American. He reported to Robert Ison, the COO.

The safety structure included Tom Lukovich, who was in charge of the FOQA program, and included about three analysts under him, and John DeLeeuw for the ASAP program, who had about five people assisting him. They had a separate LOSA program with three trained and qualified line pilots, and it was tied in with the single-operating certificate. They had nine revision cycles for implementation. On the flight side, they assisted in the implementation and validation of procedural changes. Currently the LOSA work was merger related.

The last LOSA audit on the AA side was the iPads to determine compliance and how they were used; it proved very beneficial. They were conducting "targeted" LOSAs to look at specific issues which tied in with SMS. On the flight side, they had a flight operations standards board (FOSB) and a flight data analysis group (FDAG). The FOSB was made up of high level representatives of flight safety, flight training and standards, flight operations and the FAA. The FDAG was made up of the same representatives, but included USAPA. They took data from FOQA, AQP, and LOSA, and looked at the data, analyzed it for trends, and made recommendations to FOSB for changes in procedures. The data for the programs was integrated rather than looking at each program separately. The process included flight operations, safety, and training, including the FAA, to have a comprehensive look at the data.

Based on their data, they had not seen any trends on the number of rejects associated with the A320. A year ago, they did have a reject due to the same situation as flight 1702. The crew got the "retard" alert and decided to reject the takeoff. The ASAP group talked to the pilots and found out that they did not have an assumed temperature in and when they got the thrust not set ECAM, they did not go to TOGA. They put out a notice to the pilots informing them of the event and that the crew got the "retard" aural alert. Information on that event was shared in June of last year. He did not know if there was any conversation with Airbus following that event.

Policies and procedures were part of the barriers in threat and error management (TEM), and they expected their pilots to follow procedures. He considered the PHL event a "rare" event, and they could not be expected to train for every scenario, so they put in place policies and procedures to deal with anything that came up. The most important tool they trained the pilots on was TEM to handle anything that could come up.

They tried to instill TEM in their training so the pilots would have the barriers necessary to prevent errors. The other part was task loading, the green, the yellow, and the red. They trained their pilots to recognize where they were, and which color they were in, and how to get from yellow back to green, or out of the red. They taught pilots the ABCs; how to assess, balance and

communicate. The key to all the tools was that they did not just educate them on the tools, but they took the check airmen and trained them on how to teach the pilots these tools. The check airmen were taught their own expectations in the check airman handbook. They also taught them the traits they needed to teach TEM and how to incorporate that into the AQP grading. When the check airmen went to training, they were evaluated in all aspects of how they did their jobs. They sat in left and right seats during training. They provided their pilots with the tools to handle anything they would come across on the line that were unexpected or may not have been trained.

The 80 knots reject speed for low and high speed regime was fleet wide at USAirways. He was not involved in the decision to have the 80 knot reject speed on the A320. He thought they may have looked at the 100 knots Airbus reject speed when they introduced the Airbus fleet.

They tried to make the fleets as standard as possible.

He said for the "retard" alert, following the flight 1702 accident, they did a study for the first 3 months of the year and found that there were three other occasions when the "retard" alert may have come on based on a look at various variables associated with the airplane's logic. The only occurrence that they knew for sure the "retard" alert came on was the event from last year.

There were two messages that went out last year following the rejected takeoff event; one was a CBS message and one was a safety message. Flight standards put out the CBS message, and safety put out the other message.

The main issues they were having in the safety department were related to CDFAs on next-gen aircraft that they were working through CAST.

Pilots who submitted an ASAP report automatically submitted a NASA report. He did not know the crew, and had not reviewed their records. John Conrad, the eastern region chief pilot at AA, was handling the internal USAirways investigation into the flight 1702 accident.

The only two common fleets between the two airlines were the B757 and the A320. The initial cadre of AA pilots on the A320 had been trained on USAirways procedures.

His greatest challenge in his job was putting the two airlines together. In previous mergers they experienced, the perception was that you would be introducing additional risk, but he said in reality it decreased risk since introducing change reduced complacency. During the AWE merger, they actually saw metrics improved during that merger.

The ECAM procedures were formalized on the Airbus.

USAirways pilots were allowed to commute, and the airline expected the pilot to show up to work rested. If they could not comply with that, they should call off fatigued. He was not personally involved in the fatigue risk management program. They had a robust fatigue data collection program. There was a big difference in the number of fatigue calls between the two airlines, and that could be attributed to the type of flying AA did, like night operations to Latin

America. There also could be cultural difference between the two airlines, and they were looking at those issues and the ones they had control over.

He was notified of the accident via an email from the VP of the operations control center. It started as an incident, and they activated their incident response plan. They had since put information out to the pilots to educate them on the accident. He did not know of any changes that they had made since the accident. He had not talked to the crew since the accident.

Regarding the previous reject crew, he did not know of any corrective action taken with that crew, did not believe the previous reject crew did anything wrong, and were still employed at the airline. The pilot in command was always the final say for a reject. They provided guidance, and the captain would have to use his judgment on when to reject above 80 knots; it was not black and white.

He said they did not know the reason for the previous reject, but when they learned that the "retard, retard" occurred on flight 1702, they used the information they had from crew interviews, ASAP and the chief pilot as sources of information to get that information out to pilots.

When an incident occurred, the operations control center initially sent out a message regarding the incident; it was not the primary means of notification. A communication was then sent out to the incident response group.

ASAP reports were reviewed by an analyst to determine the level of follow up based on "risk buckets." Some reports were data entry only, and others would involve follow up with the crew, and it depended on what the analyst determined. They did not follow up with the crew for every ASAP report since they got thousands of reports. The low speed rejects would not necessarily require a follow up if an ASAP report had been filed on it , but those were still collected as data. They assessed each report with high risk, medium risk and low risk. The call backs were usually associated with the medium or high risk reports. He did not know what the fleet specific reject rates were for the airline.

They trained pilots to be in a mindset of 'go' above 80 knots, when rejects were the highest risk. They did not want to train them as "auto-ma-trons", and instead wanted them to use decision making. He said the 80 knot point is "not a magic line, it is a blurred line." He did not consider a reject at 90 knots to be a high speed reject. They gave them the tools to make those decisions through TEM. If you were going to reject, you should reject prior to V1. If a pilot got a "retard" at 80 knots, he could reject, he could go to TOGA, or he could continue the takeoff. He said the flight 1702 accident occurred when the airplane was airborne and the pilot made the decision to land the airplane after takeoff.

The interview concluded at 1347.

16.0 Interview: Mark Mulkey, USAirways Principal Operations Inspector (POI)

Date: August 4, 2014

Location: Via telephone
Time: 1000 EDT
Present were: David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA); Dennis Petry – Federal Aviation Administration (FAA)
Representative: Mr. Steven Osit, FAA legal counsel

During the interview, Mr. Mulkey stated the following:

His name was Mark Mulkey, and he was 65 years old. His current title was Supervisory Principal Operations Inspector (POI) at the USAirways CMO (certificate management office) near Pittsburgh in Moon Township, Pennsylvania. He was detailed into that position temporarily during a merger from 2005-2006, and in 2007 the position became permanent. Prior to that he was the assistant POI in the CMO office. He came to the FAA in 2001. He was a rated pilot and typed on the B757/767 and E190. As a supervisory POI, he did not maintain currency. He was retired Air National Guard with 30 years of active duty in Pittsburgh before he applied to the FAA. The previous POI was David Kuntz.

Within the CMO office, they had a manager of the office, assistant manager, and 3 principle inspectors; an avionics inspector, maintenance inspector, and an operations inspector. He had a "Jband" operations supervisor, and two assistant POIs; one of which was based on Phoenix who worked the ASAP program. They also had an Aircrew Program Manager (APM) on each of the fleets, and the larger fleets had assistant APMs. They also had remotely sighted inspectors (RSIs) in various locations like CLT, where the training center was. They were current and qualified to assist in oversight and evaluations and certifications. They had an "ASA," which in essence was a secretary, and an "AST," who was a technical person who assisted in working the certificate and coordinating with Oklahoma City.

He was the supervising manager for the operations section of the CMO, and oversaw the pilot section with the APMs, cabin safety inspector and dispatch inspector. He was responsible for assigning their duties, certification and surveillance through the ATOS (Air Transportation Oversight System), and oversaw their data programs like ASAP (Aviation Safety Action Program), FOQA (Flight Operational Quality Assurance) and ATOS. He used the ATOS system to assist in his duties for surveillance, as well as the handbook guidance for national policy, and information was tracked in the PTRS system. They had a number of tracking programs to keep up with various tasks and assignments, "calendaring," etc.

He learned about the accident through a phone call from the USAirways Director of Operations while he was in a restaurant. His first action was to take the information about the accident, which was typically incomplete at the time, and then he went to the office and met the manager and assistant manager, and continued to look at the information that was available.

He did not know the accident crew, and subsequent to the accident he reviewed the crew's records, noting that the captain came off the B767 and was current on the Airbus. He did not personally look at the records in detail, just from a broad perspective. His program managers reviewed the training records. He did not look at the pilot's medical records, and said there was

an enforcement action ongoing against the captain related to his medical certificate and he requested information about it.

He was not in the simulator that often, and had not been in the simulator recently, but he did do his E190 training back when they started the MidAtlantic program, when he was the APM. He periodically did enroute inspections, and conducted observations of check rides on the E190 back when he was the APM and the assistant on the B757/767 program. The last time he did an enroute was when he went to Dallas while he was dealing with merger related issues, but that was on American Airlines.

He had "constant communications" with the airline, worked with the Director of Operations (DO) and chief pilots, and within the AQP they had an annual ERT data meeting where AQP data was reviewed. They had a safety management system program where all data was fed into their data analysis group, the Flight Operations Safety Board (FOSB), and some of his assistants attended those meetings following which he would get feedback from them. There was constant interaction with the DO, the 119 positions and the chief pilots depending on what was going on with the airline.

In the past as assistant POI and POI, he would attend the FOSB meetings, but more recently the assistant POIs had attended. He received full feedback from what went on at those meetings. He believed he was briefed on the June 2013 Safety Preflight publication that included information about a "retard" aural alert during a reported reject on the A320, and said the airline had a data analysis group that looked at that information for any needed changes. Typically, the FDAG (Flight Data Analysis Group) would look at the data, and the FOSB, as decision makers, would review the data to see if there was a need to revise their training, and he believed that the information related to not putting in the takeoff information would result in receiving a TOGA (takeoff/go-around) alert and the crew should go to TOGA was already in the manuals. He did not know if that included information regarding the "retard" aural alert.

He was sure he was aware of the June 2, 2013, memo from the Airbus Fleet Captain to Airbus pilots entitled "Flex Takeoff" that also described recent rejects, but did not mention any "retard" alert, but he was not aware if the airline conducted follow up to research why the "retard" alert came on during one of the rejects.

Safety representatives attended the FOSB and FDAG (Flight Data Analysis Group) meetings, so the airline departments had good interaction with each other. They would coordinate their messages that went out to the pilots. All the interaction was coordinated through the FOSB, and Safety sat on that board so there was interaction between the departments. One of the FOSB meetings he remembered covered unstabilized approaches identified through FOQA, and the airline went through a series of changes and callouts to improve unstabilized approaches.

He described the USAirways reject criteria as having to do with continuing the takeoff above 80 knots unless there was a dire situation that prevented a safe takeoff. The APM had specifics and coordinated oversight of those procedures.

There had been a large number of changes since June of last year because of the merger, reviewed by the program managers for approval, but he was not aware of the specifics related to rejects. Since the accident, the airline sent out some safety alerts to pilots regarding the computer set up for takeoff for Flex, and to go to TOGA for takeoff for certain issues.

There had not been a lot of changes on the Airbus fleet since American was bringing on the Airbus and had adopted the USAirways procedures. The biggest challenge were changes to the crews. The changes were staggered, based on phases of flight, and they were making adjustments to the manuals and training. They had 9 revision cycles, entering into revision cycle 6, and those changes were being made and analyzed to see if everything was going according to plan. He got feedback from the program managers regarding what the pilots saw as concerns. He did not see a whole lot of large issues or problems. He thought that USAirways had a good safety culture and a strong program, and TEM (threat and error management) was integrated throughout their program. He also characterized their AQP program as "good."

He had not had to make any recommendations to USAirways from the POI level, but thought he may have made some recommendations that had come from the APMs, and he was in constant communications with APMs, who qualified and evaluated the designees. Any required recommendations would be forwarded to him.

The last time he attended a FOSB meeting was about a year and a half ago when it was held in Phoenix. His APOI attended. They met quarterly, sometimes in Charlotte and sometimes in Phoenix.

They had an ongoing surveillance program for the airline, and he had not needed to modify it since the accident. He had not made any requests for changes to any procedures or training.

The pilot records department was in charge of reviewing pilot medical records and special issuances to ensure the pilot had a current medical certificate. Special issuances were issued by the FAA flight surgeon, and USAirways did not have a medical department.

All curriculums must be approved by the FAA office. AFS200 also reviewed changes to the training curriculum for AQP depending on the level of changes. The CMO office did not just accept everything that came over to them; they provided feedback to changes. He would work with other operators such as attending AFS1 conferences, but the details were really handled at the APM level.

There was an enforcement action against the captain, and his status was that he did not have a current medical. The first officer was accepted in the ASAP program, and her status included undergoing additional training before returning to the line.

In conclusion, with regards to their training, he said there was a good relationship with the program managers and the airline. They flew the simulators before changes in procedures were approved.

The airline's safety management program with their FOSB and FDAG groups predated their SMS program, and USAirways had that for some time. SMS implementation was at level 4, awaiting finalization of the official rule.

The interview concluded at 1042.

17.0 Interview: Robert Willson, USAirways Aircrew Program Manager

Date: August 4, 2014
Location: Via telephone
Time: 1100 EDT
Present were: David Lawrence, Katherine Wilson, Alyse Adkins – National Transportation Safety Board (NTSB); Lori Cline – USAirways; John Sabel – US Airline Pilots Association (USAPA); Dennis Petry – Federal Aviation Administration (FAA)
Representative: Mr. Steven Osit, FAA legal counsel

During the interview, Mr. Willson stated the following:

His name was Robert Ward Willson, and he was 67 years old. His current title was A320 Aircrew Program Manager (APM). He had been in that position since November 2009. Previously he spent 29 years at USAirways. He started at the FAA in August 2007 in Seattle as an operations inspector. At USAirways he flew the A330 at his retirement. He was current on the A320, and maintained currency in the simulator each April.

His background included all civilian flying and he learned to fly in Connecticut. He flew for Harrisburg Pennsylvania Airlines for 4 years, and was then was hired by Allegheny Airlines in January of 1978. He retired from USAirways at age 60.

The current organizational structure at the CMO included an office manager, and his immediate supervisor is Mark Mulkey, the POI. He had an assistant aircrew program manager on the A320. There was an RSI (remote site inspector) in Columbus, who was leftover from the America West certificate, an RSI in PHL and an RSI in CLT.

He basically oversaw the training and certification of the airmen, check airmen and APDs on the A320 fleet. They had 21 APDs on the A320; 13 were in CLT and 8 were in PHX. The bulk of the training was conducted in CLT. He was in the simulator regularly for simulator observations and checks, but normally did not conduct type rides. He oversaw all the designees, and observed the check airmen biannually. He had been in the simulator 47 times since October 1, 2013, to present, of which 43 times were doing ATOS work, including work on the weight and balance MELs and airman duties. He conducted line observations since he took the APM position in November 2009, and had been on the jumpseat 484 times.

He learned of the accident when someone came into the office and informed him about it. He called John Hope to get details, and called the training department to see what occurred since sometimes the training department got information a little quicker than others, and they had the training records. He did not know where the crew was based and called the training department

to get some particulars. The airline did not give him any information since both pilots filed ASAP reports after the accident, so he learned nothing initially, and it took a month or two to get the finer details about what occurred. He had not listened to the voice recorder, but based on information in the EIR (enforcement records), it would appear that "a lot went wrong" during the accident. He did not know the accident crew. He did review the accident crew's training records, and nothing caught his eye. Those were the only records he reviewed. He was not privy to the medical records.

To assist in performing his duties he used job aids, the ATOS quarterly assignments, instructions from the POI, and EPI's that guided him through his work and that were documented in ATOS and PTRS. They had to have quarterly events completed two weeks before the end of the quarter. He did not know of any non-resourced items from their oversight.

He had an opportunity to communicate with the line crews every time he rode on the jumpseat, and would see people he had known for years when he worked in the simulator. He was open to comments and suggestions from pilots, check airmen and APDs, and he was pretty visible in PHX and CLT. The pilots raised no concerns to him while he was riding the jumpseat, but some would remain disgruntled forever due to the merger. They raised no safety issues, and he would remind them to remain focused during the merger. Most pilots told him they enjoyed flying the Airbus. Some said they had some issues with RNAV arrivals into Phoenix and Charlotte.

During quarterly check airman meetings, he would attend for reference and comments and to make himself available to the check airmen. He conducted APD meetings annually, with the last meeting occurring in November of 2013.

When asked if he participated in FOSB meetings with the airline, he said that was at a "level above me." They briefed him on information learned at the FOSB. He did not get a briefing regarding rejects from the FOSB meeting last year. He got information from the training department, and received a March alert regarding taking off with the thrust in the flex detent without an assumed temperature.

He tried to read all alerts that were sent out. He probably read the June 2013 Safety Preflight that discussed a recent reject, and included information about a "retard" aural alert, but did not remember it. He did not believe there was any discussion within the training department about the "retard" aural alert coming on during one of the rejects.

For the APD meeting the past November, they did not talk about any of the issues associated with the rejects from the past summer because it did not seem like an issue at the time. There was no discussion about the "retard" aural alert on takeoff with check airmen or instructors. The problem of setting thrust in the flex detent without a flex temperature was discussed, and it was demonstrated and discussed in training. It was demonstrated by putting no flex temperature in the box and allowing the ECAM to present a message thrust not set select TOGA. This had also been demonstrated during initial training. The demonstration did not include allowing the airplane to accelerate to above 80 knots to get a retard message. In his opinion, that would seem like negative training to bypass the SOPs, but they may still incorporate it into future training.

The demonstration included getting the ECAM message, and when that occurred, the crew would go to TOGA to see that the message went away.

He first became aware of the aural "retard" message on takeoff in March of 2014. He did not remember seeing any information on the subject from Airbus. It did not occur on the A330, and seemed unique to the A320. He did not remember seeing the Safety Alert from the earlier summer.

The training and standards department was currently looking at the anomaly to see why the flight warning computers were generating that message and if the simulators would be able to generate those messages, and they were getting more information from Airbus.

When asked if the training department provided any input into the dissemination of information related to these rejects, particularly the one that had the "retard" alert, he said he believed the airline sent information out to the crews from the standards department post-accident, but not before the accident because he did not know "if that knowledge even existed at that time."

When asked about the USAirways reject policy, he said pilots could reject a takeoff up to V1. Low speed regime was from the beginning of the takeoff roll up to 80 knots, and the high speed regime was above 80 knots to V1. Pilots could reject for a master warning or master caution in the low speed regime. Some alerts were inhibited above 80 knots. Training on rejects was conducted during initial and recurrent simulator training. In recurrent, they generally had an engine fire/failure in the high speed regime to prompt the reject.

For a "thrust not set" ECAM, they did not require it to be a reject since the ECAM gave you a message on how to deal with the ECAM, and there was no master caution associated with it.

He had never seen a situation on the line or simulator where a pilot initiated a takeoff roll with no visible V-speeds on the PFD. He had read about it in a book, but never actually seen it. When asked if the lack of visible V-speeds on the PFD during the initial takeoff roll would be consistent with their reject criteria, he said "I would say yes," but it would probably be a reason not to begin the takeoff roll in the first place since the V-speeds were supposed to be confirmed prior to takeoff.

For "perception that airplane would not fly," he did not know how you would train that in a simulator, and was not sure how to create a scenario in the simulator to recreate that.

Most of the recent training changes incorporated FOQA data and ASAP reports, and focused on rejected takeoffs, including brake temps. There had been no changes to reject training since the accident. He thought they were going to incorporate a discussion on the "retard" alert on takeoff once they got additional information from Airbus.

He described the safety culture at USAirways as "excellent," and they had talented and hardworking check airmen, instructor pilots, and APDs. Everyone was open to the FAA, and everyone was proactive and resolved issues in a timely manner.

He had made a few recommendations over the years regarding the syllabus. He was adamant about training not being a "fire hose" and he liked training to be meaningful and properly paced. He revamped the training of check airmen and participated in check airmen recurrent training annually. The next annual training for APDs would be around November 2014, and he believed there would be a discussion on the "retard" alert, and further discussion on setting the thrust levers inappropriately and talking about taking off without V-speeds.

He was pretty happy with how the training was going. He said this accident was extremely unfortunate, and it was hard to image that this accident was not caused by a failure of the crew to follow SOPs. Training at USAirways was more than adequate, and it was inconceivable how this accident could happen.

He did not believe the ECAM procedure was to set TOGA power even though there may not be any V-speeds. He had a problem with the crew being on the runway in the first place. There was a process in place to discuss V-speeds and both crews should have confirmed that the V-speeds were not displayed on the PFD. He would expect the crew to taxi off the runway to address the lack of V-speeds. When changing runways, V-speeds went into an area to the right of the boxes and needed to be reinserted if they were the same. So many things occurred leading up to this accident. There was more than enough thrust even if they did not go to TOGA. He could not imagine someone taking off without V-speeds, and found the whole thing interesting. There seemed to be some "immediacy" to takeoff for the crew.

They were always trying to teach SOPs and make it as meaningful as possible, and the hard thing was that if you deviated from the prescribed program, the airplane may not provide the feedback you may need. A takeoff without the thrust set properly in the flex detent was one thing, but taking off without V-speeds, that was something. The airplane would fly very nicely if your thrust was still in flex; it did not affect the characteristics of the airplane. They harped on SOPs all the time.

The interview concluded at 1158.