Interview Summary

Name: Kimble Wallace, Airport Manager, Horace Williams Airport
Location: Telephone Interview
Date/Time: December 9, 2014, 1613
Present: Brannen

During the interview, Mr. Wallace stated the following information. When asked if he knew of the pilot's activities prior to the accident flight, he reported that the pilot normally had little contact with airport employees. He said that the pilot would normally show up at the airport, park his car next to the hanger where he kept the airplane, pull the airplane out and pre-flight it, and then depart without any interaction with airport personnel. He said that occasionally he would call and request to have the airplane pulled out of the hangar for him, but that he only entrusted this task to two of the employees at the airport, one of those being the airport manager. Mr. Wallace added that the pilot normally purchased fuel at other locations and seldom purchased fuel from IGX, however, on the accident date the pilot did purchase fuel from IGX. Mr. Wallace said that on the morning of the accident he was not at the airport and that one of the airport employees had interacted with the pilot. Mr. Wallace provided contact information for that employee (David Brown). When Mr. Wallace was asked if he knew where the pilot received training for the accident airplane he said that the pilot hired an instructor that came to IGX and flew with the pilot for 6 or 7 full days. He was not sure, but he said that he thought the instructor's name was Kevin and that he was from Morehead City, North Carolina. He also said that the pilot had asked him if there was a place on the airport that could be used for the ground portion of the type certificate examination and he told the pilot that he could use the office that had been converted to a pilot lounge. He was not sure if the pilot had used the lounge for the examination. Mr. Wallace provided additional contact information for the pilot's wife. This concluded the interview.

Interview Summary

Name: Alexander King, flight instructor, Washington International Flight Academy
Represented by: Thomas Grimme
Location: Montgomery County Airpark, Gaithersburg, Maryland
Date/Time: December 8, 2014, 1500
Present: Bramble, Byrne

During the interview, Mr. King stated the following information.

Mr. King said he held a CFII and MEI and his total flight time was 1,170 hours. Mr. King was in an a Cessna 172, N9400L, with a student in the run-up area for runway 14. He was facing the direction of the approach to runway 14. He was half listening to radio and he recalled hearing a Phenom jet make three transmissions announcing that it was 7 miles, 5 miles and 3 miles out. Mr. King thought the jet called 3 miles a lot further out than 3 miles because he remembered seeing the jet emerge from the clouds and seeing the landing lights. His student actually pointed it out to him.

After seeing the jet, he looked back inside the cockpit while the student was performing the run-up. The next time he looked up, he saw the jet in what looked like an uncontrolled S-turn. It was coming out of one turn and then it rolled the opposite direction before descending and disappearing behind trees.

It appeared that the jet was going too slowly, but Mr. King was not sure. Mr. King said he was a multi-engine instructor pilot and he thought that with the airplane's two engines so close to fuselage, losing an engine would not have affected VMC. It just looked more like when you see an airplane going too slow and it begins oscillating in roll.

Another Washington International Flight Academy instructor, Kenneth Ansorge, was on downwind with a student in a different Cessna 172, N5215E, and he had a good view of the approach to runway 14 from a flight angle while Mr. King had a view from the ground. Mr. Ansorge transmitted on the radio that the Phenom jet had just gone in short of the runway. Mr. King got on radio next, replied "shit," and reported on the CTAF that the airplane had just crashed in the vicinity of Muncaster Mill Road. Mr. King then called Potomac TRACON and gave a report. They thanked him. He then got on the CTAF, flew over the crash site, took some pictures and video, and then landed.

Another Cessna 172, N52632, had been up in the vicinity of the airport as well, but they had already landed and they were clear of the runway at the time of the accident. They were actually clear of the runway before the Phenom jet even appeared out of the clouds. The jet came out of the clouds around 3,000 or 2,500 feet msl. The ceiling wasn't as low as it looked. Asked to estimate the cloud height, he said 1,700 to 2,000 feet. Asked to estimate the visibility, he said 4 to 6 miles. Asked if there were any obstructions to visibility, he said there was a line of snow showers coming in from the northeast, but it had not hit the airport yet.

Asked if the approach path had been clear for the Phenom, he said yes, he had flown well above the approach path when he flew out to survey the crash and it was fine. Asked if there was any precipitation at the airport at the time of the accident, he said there were some light flurries, but nothing of any consequence. Asked about the winds, he said the weather he and his student heard at the time was winds 050 at 3. The previous 5 minutes, the winds had been varying between calm and 050 at 3. Flight conditions were favorable.

Asked to clarify when the jet came out of the clouds, he said around 2,500 feet, nowhere close to minimums.

Asked to clarify when he noticed the airplane making S-turns, he said the airplane's attitude was stable when he looked inside for the run-up and when he looked up again the airplane was going from a bank in one direction to a bank in the other direction and it's attitude appeared to be unstable.

Asked if he had made a previous flight that day, he said yes, earlier in the day he had taken off from runway 32.

Asked whether he had observed the functioning of the VASI during his orbits over the crash site, he said yes, when he returned from the crash site he landed on 32, but he saw that the runway 14 VASI lights were working when he flew over them.

Mr. King did not know the pilot of the accident airplane, nor did he know anyone who knew the pilot. He was familiar with the airplane, but he did not know where it was based.

He saw the Phenom break out about 2,500 feet. When he flew over the crash site, he was above the pattern altitude of 1,500 feet and he was still 500 to 700 feet below the clouds.

Asked if he could think of any other potentially useful information that he had not been asked about, he said no.

Mr. King was asked whether he made the call on the Unicom about birds in the area. He stated he had done that while on the ground in N9400L. He said the birds he was referencing were on the ground and described them as a flock of geese that have been around the NW end of the runway for a few weeks -- near the 1000 foot marker for runway 14. He reported there were no birds in the direction of the accident airplane airborne along the approach path. He didn't see any flying by.

Interview Summary

Name: Ms. Hadar Shapiro, flight instructor, Washington International Flight Academy
Represented by: Thomas Grimme
Date: 12/8/2014, 1615
Present: Bramble, Byrne

During the interview, Ms. Shapiro stated the following information:

Ms. Shapiro is a CFII and was in N52632 with a student this morning when the accident happened. Before the accident they had departed runway 14 and when they reported turning downwind she heard the jet reporting 10 miles out on the approach for runway 14. When they were about to turn base the jet reported that he was 7 miles out on the approach. They turned base and reported turning base, then turned final and reported turning final, and then they landed. After they landed she radioed to another instructor who was preparing to depart that there was some weather coming in towards the airport. They were already taxiing back to the parking position when they heard the radio calls about the accident happening. She was able to look behind them and see the black smoke rising up.

Ms. Shapiro said she had planned on leaving the traffic pattern but as they were climbing up to 2000 feet she saw a wall of snow to the coming toward them and told the student they were going to land. They descended back down to 1500 feet for the pattern and landed. She described the snow as coming from the direction of Frederick. They did not encounter any snow on final. She said snow was not at the airport at the time of the accident. She said it was far away and not there yet. She described the wind conditions as no wind, even though they reported it to be around 5 knots, you didn't feel anything and it seemed clam to her. There was no turbulence.

While on downwind she was looking for the accident airplane because she had heard his radio calls but did not see it. After they had landed she heard the pilot make the 3 mile call.

Interview Summary

Name: Kenneth Ansorge, flight instructor, Washington International Flight Academy
Represented by: Thomas Grimme, Chief flight instructor for the school
Date: 12/8/2014, 1530
Present: Bramble, Byrne

During the interview, Mr. Ansorge stated the following information.

Mr. Ansorge is a CFI with about 350 hours total time. While still on the ground he heard the accident airplane make a radio call on the advisory frequency before it started the RNAV approach. He and his student took off and the accident airplane made a 10 mile call right afterwards. He couldn't recall the accident airplane's distance calls exactly. After takeoff they turned crosswind and then turned downwind. He knew the accident airplane was getting close so while on downwind he was trying to visually acquire the airplane. While about midfield downwind he saw the airplane on short final – its landing light was the first thing he saw. The airplane was making uncontrolled S-turns. It also appeared to be pretty low, and although he couldn't estimate the airplane's altitude he said it appeared to be a lower than normal glidepath.

The accident airplane banked left then right then left again, and was on the third one when he went over into the ground. He said when he first saw the airplane it was already banking pretty wildly so he wasn't sure how far out it had started. He saw the airplane go inverted, hit the ground, and witnessed the fireball.

Mr. Ansorge made a radio call letting other planes know that the accident airplane came up short. He said one of the other instructors let out an exclamation after he made that call. Mr. Ansorge then turned his airplane around to be on downwind for runway 32 as he did not want to overflight the accident site and there was smoke now on the approach path for runway 14. He asked the other instructor on the ground about contacting Potomac Tracon and that instructor said he would take care of it.

Mr. Ansorge described the weather conditions at the time of the crash. The ceiling was probably 1500 feet to 2000 feet. They were well below the ceiling at pattern altitude and could have made a full pattern to runway 14 without coming near the clouds. He thought that NW of the airport the ceiling may have been lower. He thought the bases were mostly smooth but there were a few patches where they may have been ragged. There had been very light snow flurries on and off but at the exact time of the crash he thought the flurries had stopped. Estimated visibility about 5-7 miles. He said the winds were about 060 at 6 when they got their weather report and he said they appeared to be shifting between that and 140 – the wind sock was swinging back and forth between straight down the runway and about 060. There was no turbulence, it was very smooth.

Other aircraft in the pattern about the time of the crash included N9400L a C172 on the ground still in the run-up area for runway 14, and N52632 which was another C172 that had landed and cleared the runway before the crash. The instructor in N52632 was the one who radioed the instructor in N9400L about some weather coming in. When Mr. Ansorge took off there was a Tobago in the run-up area for runway 14 but when he was on downwind he saw the Tobago taxing back toward the ramp.

He did not observe the VASI when he departed runway 14.

He did not know the accident pilot and also did not know anything about this specific airplane – other than it was a Phenom 100.

He described the accident airplane's movements – he said the first bank was to the left almost 90 degrees when he saw it; then it banked to the right about 90 degrees, and then back to the left and inverted. He said if the roll attitude was not 90 degrees it was close to it. He said the airplane did not travel very far after he first saw it to the crash site. He couldn't estimate the airplane's speed.

Asked whether he perceived any spacing conflict between his airplane and the approaching accident airplane, he said no, there was no conflict.

This concluded the interview.

Interview Summary

Name: Mr. Frederick Swindal Jr.
Date: 12/10/2014, 1535
Present: John Brannen

During the interview, Mr. Swindal stated the following information:

Mr. Frederick Swindal Jr. called via telephone regarding the accident investigation. Mr. Swindal said that although he was not close friends of the pilot, he was acquainted with Mr. Rosenberg. He said that he was a retired U.S. Airways pilot and knew Mr. Rosenberg from the Horace Williams Airport. He said that he talked to Mr. Rosenberg on several occasions. He said that Mr. Rosenberg took flying and flight training seriously and applied himself in regard to training. He added that when Mr. Rosenberg was preparing for his type certificate he administered a mock oral and Mr. Rosenberg had good knowledge of the accident airplane and provided answers right away without hesitation. He said that he knew that Mr. Rosenberg got the type rating from a Mr. Norton from Florida and added that he thought he had also received flight instruction in California. He said that a flight instructor named Kevin Snyder also provided Mr. Rosenberg with flight instruction in preparation for the type rating. He said that he thought Mr. Rosenberg had received recurrent training at CAE. He added that in conversation with Mr. Rosenberg, he advised him to set personal minimums of 800-2 for his first 100 hours in the airplane and 600-2 until he had 300 hours in it. He said Mr. Rosenberg was open to those suggestions. Mr. Swindal said that he wasn't aware of any "horror stories" wrt the pilot or his flying abilities. He again stated that Mr. Rosenberg took flying seriously. Mr. Swindal added that he was concerned that the Phenom 100 did not have ground spoilers and commented that the accident pilot had "flat spotted" tires at one time in the airplane. Mr. Swindal said that Mr. Rosenberg was a very nice man. He said that Mr. Rosenberg had a house in Daytona at the Spruce Creek Airpark and that he made several trips down there. Mr. Swindal also said that he looked at the weather conditions at the accident airport and said he thought there could be a potential for icing. He added that he wondered about how the airplane reacted to body ice. In parting, Mr. Swindal provided contact information and said that he could be contacted again if the need arose.

Interview Summary

Name:	Travis Holland, Kenmore Crew Leasing Inc., dba Holland Aviation
Representative:	Declined representation
Location:	Telephone Interview
Date/Time:	1400, December 31, 2014
Present:	Bramble (NTSB), Brannen (NTSB), Banning (NTSB), Hoffamn (FAA), Baerst (Embraer)

During the interview Mr. Holland stated the following:

Before working in aviation, he had been in the restaurant business. At age 23 he obtain his private pilot certificate, followed by his instrument rating and then started flight instructing. He had the opportunity to do turbine transition training which he said was the most regulated, and worked with a corporate flight department for a couple of years.

In 2006 after a couple of years in corporate aviation he started his own company Kenmore Crew Leasing Inc., dba Holland Air, where he served as the owner/president. The mission of the company was to help people achieve training to transition to jet aircraft, with a keen eye towards industry best practices. His company provided on location training in the clients' aircraft, scheduled at their convenience. Clients consisted of a lot of low time pilots who needed more training than their standard flight training package offered, and/or high time pilots who wanted a customized package.

He stated that this was the first time that a pilot his company had trained had been fatally injured in an aircraft accident, and it had shaken his company.

Mr. Holland's flight experience consisted of about 8,500 hours total time, with about 1,200 hours in jets, 1,100 hours in very light jets (VLJ), and about 1,000 hours in the Phenom 100. He held type ratings in the Citation Mustang, GIV, G5 and a second in command (SIC) rating in the Falcon 50.

He had been flying about 800 hours a year until a couple of years ago. Since then, he had been trying to cut back to 500-600 hours a year to spend more time with his family. He still worked 20+ days a month. He was not currently a designated pilot examiner (DPE) but had been working on the possibility of becoming a PPE in the Phenom. He averaged about 10 Phenom pilots a year, 1 mustang pilot last year, and 1 mustang pilot the year before. He also worked with PC-12 and Malibu pilots providing initial insurance approved training.

He was aware of about 4 independent training companies similar to his.

Asked how he came to know Dr. Rosenberg, Mr. Holland said Dr. Rosenberg was acquiring an aircraft and approached him requesting training in January or February 2014. He put Dr. Rosenberg on the training schedule for the last week of March.

The aircraft that Dr. Rosenberg purchased was located in France. The seller provided a pilot who flew with Dr. Rosenberg from France to the U.S. Dr. Rosenberg acquired about 20-25 hours of initial operating experience (IOE) on the flight from France, but he had not received any technical training in the Phenom before he began training with Mr. Holland.

Dr. Rosenberg initially requested a 3-day transition course from Mr. Holland. Based on his lack of previous jet experience Mr. Holland recommended he book the entire 9-day course and informed Dr. Rosenberg that if he finished early he would not be charged for the entire course. The standard training course consisted of about 8 to 10 days (one on one, 8 hrs. a day) and it normally concluded on the 10th day with the completion of the type ride. The three day course was designed for clients with previous jet experience and multiple type ratings. Mr. Holland stated that "that was how things got started with him [Dr. Rosenberg] trying to take a shortcut".

Dr. Rosenberg arrived for training in Bellingham, WA with his airplane after just completing the ferry flight from France. Mr. Holland said at age 67, Dr. Rosenberg had purchased a 2.5 to 3 million dollar airplane, flown to France coach class to save money, ferried the aircraft to Bellingham and immediately started training with no rest day in between. Mr. Holland stated that a pilot would be exhausted after ferrying an aircraft from Europe. He thought the fatigue would be mindboggling, but Dr. Rosenberg wanted to begin training immediately. In Mr. Holland's opinion this was another "red flag".

Mr. Holland said that when Dr. Rosenberg showed up for training he seemed to have a propensity for frugality, he was really smart and seemed to think that some of the requirements should not apply to him, but his flying skills were not consistent with his intellect. By day 6 they had done a fair amount of single engine work and yet Dr. Rosenberg only had about a 50 percent success rate with stepping on the correct pedal during V1 cuts. Most clients would step on the wrong pedal once or twice in the first six V1 cuts. It was unusual that he would continue to struggle over so many days; it was evident that Dr. Rosenberg was becoming task saturated. He was very motivated and tried extremely hard and did not attempt to take shortcuts once the training had begun. The training was performance based, so he had to fly to the standards.

Dr. Rosenberg's type ride had originally been schedule with Mr. Roth, one of two designated pilot examiner (DPE) in the Phenom100. Mr. Roth was located in the Los Angeles area.

Mr. Holland stated that as they approached the type ride things were not going well. They postponed the ride for a couple of days to make time for additional training but Dr. Rosenberg seemed to have reached a learning plateau and was failing to make progress. On one occasion, they were out in Victorville approaching terrain at 220 knots (which was very fast) on one engine, following a V1 cut. Mr. Holland stated that a pilot could not afford to spend 4 ½ minutes coping with a single task in that situation. The terrain was 25 miles away from the airport and they were three-quarters of the way there, still leveled off at a low altitude with one engine going at takeoff power. It was not unusual to see this type of task saturation early on in the training, but there seemed to be a pattern with Dr. Rosenberg.

Mr. Holland stated that the he helped his clients by helping them understand their own level of proficiency and informing them of the standards they needed to meet to complete the training

and pass the type ride. After evaluation Dr. Rosenberg agreed to cancel the type ride and he went home with a second in command (SIC) rating.

When asked to describe Dr. Rosenberg's overall performance, Mr. Holland sated that it was average for a TBM transition pilot. His stick and rudder skills were fine. He stated, "I've had guys who couldn't hand fly an airplane and aerobatic contenders and he was nowhere near either extreme." Dr. Rosenberg's standard air work was fine. Where he struggled was with task saturation rather than with an inability to operate the aircraft. His airspeed management was fine as long as he was focused on it, but it would become an issue if he was tasked saturated.

Dr. Rosenberg understood the systems well enough and could competently program the G1000. He had previously flown other aircraft equipped with the G1000 and he had extensively used the desktop trainer Mr. Holland made available to him during training, but he still struggled with staying ahead of the airplane in the air traffic control (ATC) environment. Examples included programming tasks and frequency changes. For example, he would not adequately anticipate a frequency change from approach to tower. Asked whether Dr. Rosenberg had difficulty understanding how to program the flight path management system, he said no, Dr. Rosenberg understood it well enough. He just had difficulty with preplanning. He did not struggle with the individual steps, only the total task.

Compared to other pilots he was an average student, Mr. Hollands concerns about Dr. Rosenberg were more personality and judgment-based. Dr. Rosenberg's greatest strengths as a student were his ability to digest an index page of 160 limitations in an hour. He had strong rote memorizations skills, aggressive study techniques, and high motivation to master the aircraft. He primarily struggled with fixation and task saturation.

Asked whether Dr. Rosenberg had any difficulty with basic instrument skills during their training together and whether his scan was up to par, Mr. Holland said Dr. Rosenberg struggled with the use of the flight director (FD) early in training. That had stood out, but Dr. Rosenberg developed that skill as training progressed. By the time he left, his scan and basic instrument flying skills had improved to normal.

As an example of Dr. Rosenberg's fixation/saturation during training Mr. Holland stated that V1 cuts and single engine missed approaches were a couple of the most critical items in the check ride world. Five or six items had to be done in the correct sequence to deal with the emergency. Paramount was making the nose go straight, because if you did not do that everything else unraveled. Time and time again, Dr. Rosenberg would freeze up a little during a V1 cut. He would step on the wrong pedal and bobble the next four or five steps. He could recite them on the ground but struggled with his ability to perform them in the situation. Sometimes task saturation would cause him to end up fixating on a subtask.

During training Dr. Rosenberg progressed rapidly at first, plateaued, then progressed, followed by a consistent plateau with very little forward progress for about 3 days. Mr. Holland started to see fatigue affecting Dr. Rosenberg's performance which ultimately led to his decision to cease training and send him home. Dr. Rosenberg needed a break.

Mr. Holland issued Dr. Rosenberg a Second in Command (SIC) endorsement so he could log flight time and hired a pilot to fly Dr. Rosenberg home from Chino. Dr. Rosenberg was very concerned about being able to log the flight time.

Mr. Holland told Dr. Rosenberg to take a week off and obtain more training to build his confidence. He put him in contact with Mr. Kevin Snyder who was based near Dr. Rosenberg's location and had TBM and Phenom experience. Dr. Rosenberg ultimately took his check ride with Mr. Tom Norton because he too was near Dr. Rosenberg's location and was willing to travel to give check rides. There were only two Phenom 100 DPEs in the country that Mr. Holland knew about, and Mr. Norton was in the eastern U.S.

Mr. Holland stated that by the time Dr. Rosenberg took his type ride he had accumulated about 70 to 80 hours in the airplane: 25 hours on the flight from France, 21 hours training with Mr. Holland, 21 hours training with Mr. Snyder and about an 8 hour flight across country with Mr. Langston.

Mr. Holland said that the average client, transitioned to his first jet from one of four or five airplanes (i.e. TBM, Cirrus, Pilatus), and took about 40 hours of flight training if he is prepared. A simulator school consisted of about 12-13 hours of flight training, and was designed for pilots who were already proficient or had mastered high performance jet aircraft.

This was Dr. Rosenberg's first jet, but he did have previous TBM experience. Mr. Holland was unsure of Dr. Rosenberg's total flight hours as this was a type rating being added to Dr. Rosenberg's existing airline transport pilot (ATP) certificate, but believed Dr. Rosenberg tracked his flight time in a physical pilot logbook. He estimated Dr. Rosenberg's flight experience at 3,000 to 3,500 hours based on the fact that he had acquired his ATP about 10 years ago. He stated that was just a wild guess.

It had been quite some time since Mr. Holland had communicated with Dr. Rosenberg. He had seen him at a Phenom owners convention in June 2014. He had contacted Dr. Rosenberg a few months after his initial training to offer additional training, but Dr. Rosenberg had elected to use Mr. Snyder. Mr. Holland felt that Dr. Rosenberg was reluctant to use Mr. Holland's services, since he had been unable to complete Mr. Holland's initial training course and his check ride had been canceled. The last time Mr. Holland had flown with Dr. Rosenberg was at the end of March. Dr. Rosenberg had later inquired about recurrent training, but he wanted a one day course rather that a 3 day course, and Mr. Holland would not provide it based on Dr. Rosenberg's past training performance.

Mr. Holland stated that the first three to five days of his type rating course consisted of ground school in the morning and a flight in the afternoon. Mr. Holland stated the he believed his ground school was similar to CAE Simuflite and Embraer (and it was approved by insurance companies). It covered the aircraft systems one by one and lasted 18 to 20 hours. The flight portion of the training began with normal operations, coupled approaches, and avionics management, which were a huge part of flying the Phenom 100. Once proficiency with basic point to point operations was attained, they proceeded to hand flown flight director (FD) operations, single engine operations, single engine approaches, and V1 cuts, followed by check

ride preparation and mock check rides. Average flight time was about 40 hours for a first time jet pilot, and about 12 hours (not including the 2 hour check ride) for an experienced pilot.

Embraer standard operating procedures (SOP's) were used for the most part, but in some areas Mr. Holland's company had developed their own SOPs. A training book that included maneuver profiles was issued to each student and an Embraer SOP manual was provided for line operations. Mr. Holland stated that without power recipes students tended to have a hard time finding consistent success. For approaches, he taught Vref +10 stabilized on final, -0 until the flare, which was 5 knots faster than the PTS standards. He also taught two other variations to the standard SOP's that included maintaining170 knots to the marker when operating VMC in busy terminal environments (ATC was uncomfortable with 5-mile, 90-knot finals) and maintaining 120 knots until on a 3 mile final, at which point the pilot was to begin slowing to Vref.

Mr. Holland stated that the N1 power settings he recommended during approaches were about 60 to 65% in level flight configured for landingand about 55% percent power configured for landing on a 3 degree glideslope,. However, one might need to add or subtract some power depending on the headwind or tailwind component and whatever else was required. Anything below 40% percent power should only be used for decelerating. Normal pitch attitude for a 3 degree glideslope at Vref was 0 to +1 degree, L/D_{max} was around +2.5 degrees. At Vref +5 you would expect 0 to -1 degrees.

Mr. Holland stated that bleed air, heat, pressurization were all covered during training. The environmental controls were astonishingly simple to use when not malfunctioning. He noticed no deficiencies in Dr. Roseburg's performance as it related to the use of the environmental controls. Weather in the terminal area was checked via the automated terminal information system (ATIS), and for cross-country flights the XM weather in the aircraft was utilized (and covered during training). He was not sure what system Dr. Rosenberg used to file flight plans.

Mr. Holland stated that stall training was introduced during the second training flight. The stall training consisted of stalls in the landing and clean configurations, accelerated stalls (turning), and a pusher demonstration. Previous to the Colgan accident, pilots were trained to recover with power only. Currently he trained pilots in the Phenom to recover by reducing pitch at least 2.5 degrees but no more than 7.5 degrees relative to the pitch at the time of stall onset, while simultaneously adding full power (to the detent). The use of power was emphasized for stall recovery during training in jet powered aircraft. They did not train pilots to push the power lever through the detent into emergency(MAX) power.

Mr. Holland stated that approach speed was on the back side of the power curve. He could not recall if Dr. Rosenberg had a synthetic vision system (SVS) as part of his avionics package. If he did, they would have gotten into looking at the flight path marker (FPM) position relative to the aircraft attitude on the PFD to back up speeds. The FPM showed a 3-dimensional flight path. If the SVS option was installed in the airplane, there was a service bulletin that would be in Embraer's records. There was a triple package to indicate a stall or approach to a stall: angle of attack system; stall speed awareness indications on the airspeed tape with auditory warnings; and flight path angle compared to deck angle.

Mr. Holland stated that he trained pilots to recover at the first indication of a stall which was consistent with ATP standards. The first indication in the Phenom 100 was an auditory warning. Full power was added while simultaneously reducing pitch by about 2.5 degrees. Due to the fact that the engines were mounted high, the addition of power reduced the angle of attack (AOA). If power alone was added during a stall recovery, the aircraft would pitch down to about -7 degrees, so that tendency had to be counteracted somewhat. Stall training was normally conducted in the weather that they had to work with during flight training whether VMC or IMC, but they would try to get a block of airspace in the clouds if it was available.

Mr. Holland stated that the Phenom 100 was equipped with a pusher to prevent the aircraft from stalling. According to Mr. Holland, the Federal Aviation Administration (FAA) required aircraft with adverse stall characteristics to be equipped with another system to prevent a stall from occurring.

Mr. Holland said that the pusher demonstration was performed at altitude, and normally in the clean configuration. The autopilot (AP) was disconnected at 120 knots and back pressure added to maintain altitude. At the first indication of the stall, instead of recovering, back pressure was maintained. At 12 degrees AOA the stall warning was initiated and at 15 degrees the pusher fired. The recovery technique was to let the aircraft push while simultaneously adding power and then, after about 1 second, begin pitching up. A secondary stall is avoided by not pitching up to abruptly (which could cause the airspeed to decrease into the red on the airspeed tape). Pilots had to be trained to come back with about half the back pressure that they wanted to use, and to maintain airspeed in the yellow region on the airspeed tape during recovery. Mr. Holland said that as in the Morristown TBM accident, it was natural to want to pitch up abruptly in response to uncommanded nose down inputs. Mr. Holland said that the demonstration was flown by the student and he would only have provided input on the controls if necessary. He stated that Dr. Rosenberg would have flown 3 or 4 stall series sessions during normal flight training and that he would have experienced about four more during checkride preparation. However, due to the fact that Mr. Rosenberg experienced difficulty during checkride prep, he estimated that Dr. Rosenberg would have received the stall pusher demo at least a dozen times

Mr. Holland said that during stick pusher activation one did not notice any simultaneous changes in roll. It was very symmetrical so an asymmetric reaction was not required. The push was straight forward on the yoke. Asked to clarify whether the airplane tended to stall symmetrically, he said the airplane did not actually stall because the pusher would activate before a stall occurred. The pusher prevented a stall from occurring.

Mr. Holland did not recall any deficiencies with Dr. Rosenberg's pusher recoveries. Nothing stood out as far as an inability to recover or a propensity to encounter a double push. Most applicants got a double push once or twice in all their training, but once a pilot became familiar with the "swing" of the pusher it was easy not to over-recover. A 250-foot altitude loss was typical, a 300-foot altitude loss if a pilot was not very proficient. There would be no hazard unless the airplane was on about a 1-mile final. He stated that 500 feet would be a scary time to have a pusher activation and might take an abrupt reaction, but a smooth recovery would still be possible.

Mr. Holland said icing procedures were covered in training and they consisted of two parts: operations limitations/normal ops and performance limitations. Outside air temperature (OAT) was used to determine when deice and anti-ice equipment was turned on. The engine anti-ice was turned on in visible moisture with an OAT of +10 degrees Celsius or colder, the de-ice boots were turned on in visible moisture at +5 or colder. The new de-ice/anti-ice equipment was turned on when required and not turned off again until the airplane exited icing conditions, thereby reducing distraction to the flight crew compared to older-generation equipment.

Mr. Holland stated that the Phenom's runway performance was marginal when it was operated hot/high or in icing conditions. The pilot was basically limited to flaps 3 in icing conditions, and the limited to runways of 5,000 feet or greater. There was an advisory message that told the pilot when the boots were on. The green donut also moved to identify new target airspeeds; from a normal ref speed in the mid 90's to an icing ref speed in the mid 110's, adding about 20 knots. He said students were trained per the Embraer AFM to monitor static air temperature on the primary flight display (PFD), not to look for ice on the airframe. If the OAT was +5 or colder in visible moisture the de-ice/anti-ice should be on; per chapter 2 of the operating limitations. After exiting a cloud deck, if in VMC and clean, the de-ice/anti-ice could be turned off, but Dr. Rosenberg would have to make that part of his performance plan going into KGAI.

Mr. Holland stated that they did encounter icing conditions during training with Dr. Rosenberg and most of the training was conducted IFR. With a couple of days being low IFR and all operations conducted with the de-ice/anti-ice equipment on. He stated that icing in a jet is terminal area icing and they did a fair bit during training.

Mr. Holland said that the use of short runways was also covered during training. About 75% of the flight training was conducted at Bellingham, WA which had a 3,400 foot runway. Chino and Victorville were used for check ride preparation. Dr. Rosenberg planned to keep the airplane at Chapel Hill, which had a 4,000 foot runway, instead of the slightly more expensive but lower-risk Raleigh Durham Airport. He told Dr. Rosenberg that if he was going to make that choice he needed to understand what the airplane could do and have a plane to use Raleigh Durham when conditions required (even wet conditions would provide a challenge for Chapel Hill). Asked how unusual it was for a pilot to base a Phenom at a runway as short as Chapel Hill, Mr. Holland said it was virtually unheard of for someone to keep a Phenom 100 at that small of an airport. He had heard of some Phenoms being based at Santa Monica, which was slightly longer, but it was not common to base a Phenom at such a little airport when there was a larger airport nearby. He said he believed Dr. Rosenberg's decision to base the airplane at Chapel Hill spoke to his frugality.

Mr. Holland used a Phenom iPad app offered by the Phenom owners association to conduct performance calculations. He then validated the numbers using the aircraft manuals. He believed Dr. Rosenberg was using the aircrafts quick reference handbook (QRH), or may have used an App on his iPad.

Mr. Holland stated that he blocked the aircraft on flight aware at the Doctor's request in March. He stated that there was industrial espionage information that can be gleaned from the movements of a drug company CEO, and he felt Dr. Rosenberg wanted to keep that information from his competitors.

When asked how the Phenom compared to the other jets he had flown Mr. Holland stated that he thought the Mustang was a little more docile, but both the Phenom and Mustang were dramatically simpler than the 2-crew airplanes with a lot of complex systems. He also stated that the G1000 was much simpler to operate than the Honeywell flight management system (FMS).

Asked if Dr. Rosenberg had received any training from Neil Singer, Mr. Holland stated that he knew Dr. Rosenberg had talked to Mr. Singer extensively before he booked his training with Mr. Holland and that Dr. Rosenberg had a lot Mr. Singer's materials. He thought Dr. Rosenberg was unable to train with Mr. Singer due to scheduling conflicts.

Asked why Dr. Rosenberg chose aircraft training over simulator training Mr. Holland said that Dr. Rosenberg didn't have 15 consecutive days to train, which would have been required for a simulator school. In addition he needed 25 hours in the aircraft of supervised operational experience (SOE) for his insurance because it was his first light jet. Mr. Holland did not believe Mr. Rosenberg's decision to train in the airplane was a financial decision because training in the aircraft was more expensive than a simulator school.

Asked how long it took for Dr. Rosenberg to meet the practical test standards (PTS) Mr. Holland stated that he was only able to achieve PTS on some tasks, in the 21 hours that he worked with him. He was able to complete individual tasks, but could not complete a mock check ride, which is why the decision was made to cancel. It was a work load management issue; he could perform individual takes but was unable to put all the pieces together. He believed his experience level and fatigue were beginning to take a toll.

When asked if Mr. Holland's course included a high altitude endorsement he said he would have issued one to Dr. Rosenberg, but since he had already been flying the TBM it was not necessary.

Asked whether Dr. Rosenberg had any issues with airspeed control or task saturation during a normal approach Mr. Holland stated that he used a building block concept during training. This approach consisted of a coupled of normal approaches, followed by a hand-flown normal approach, followed by abnormal approaches, both coupled and hand-flown. Due to the fact that the Phenom was a high performance airplane utilizing the G1000 the pilot had to punch buttons whether the airplane was flying or not, and that was learned initially. Day 1 was more difficult than day 4, but Dr. Rosenberg's performance was not abnormal; he could set up and couple approaches, and he did not struggle with these maneuvers. Steep turns, unusual attitudes, engine restart were other pieces of the maneuvering package. Non-check ride pieces included TAWS demonstration, accelerated stalls, (45 degree bank, slow down to donut to show how stall speed differs with angle of bank). Embraer choose not to certify the airplane to use the donut (1.3 Vstall circle) for approach speed calculations, but Mr. Holland taught students to fly the high side of the doughnut, as it was AOA-based.

When asked again about Dr. Rosenberg's use of checklists Mr. Holland stated that it was good, almost too good. Single pilot jet operations required some items to be covered using a flow and then come back to the check list. He was diligent in his checklist usage "to a fault" which sometimes led to task saturation. He was using the checklist as a "do list", rather than as a

checklist. He would fixate on checklist elements to the exclusion of other information when that stuff could wait. Mr. Holland taught that some tasks could wait and others could not. Sub-tasks were a pyramid not a conveyor belt. That was the struggle, not using a flow and not deferring checks until lower workload periods.

Asked if Dr. Rosenberg exhibited any hazardous attitudes Mr. Holland stated that Dr. Rosenberg's estimation of his intellectual abilities led him to overestimate his piloting capabilities and to underestimate risks. This caused him to make decisions that a more qualified pilot would not make, such as basing the aircraft at a 4,000 foot runway.

When asked if he retained any additional notes or documentation Mr. Holland stated that he had his own electronic log that consisted of approaches and notes on activities, but did not keep grade sheets for every maneuver on every day. He also had the two endorsements he issued, along with his integrated airman certification and rating application (IACRA) application.

When asked how often Phenom pilots were required to receive training Mr. Holland stated that 61.58 requires annual recurrent training, insurance companies required insurance-approved recurrent (12 month) training, and it was not uncommon for insurance companies to require a 6-month recurrent after initial training.

When asked about the doctor's communications skills Mr. Holland said nothing stood out. He trained his students to be clear and concise on the radio. He would occasionally miss a radio call when he was task saturated, but that was common for all pilots.

Mr. Holland was asked if he was familiar with a Citation call sign N820JT and he said no, that call sign did not sound familiar.

Asked to confirm whether airspeed management was one of Dr. Rosenberg's performance issues when he was task-saturated, Mr. Holland said yes, energy and flight path management; speed and path.

Asked to confirm that Dr. Rosenberg stepped on the wrong pedal 50% of the time during V1 cuts, Mr. Holland said yes, it really stood out.

Asked if there was any other information he had not been asked about that he could provide that might be useful to the investigation he said that the whole thing just didn't add up. The airplane shouldn't stall until 73 knots in the full flap configuration. Witness accounts of the aircraft rolling inverted suggest an aerodynamic stall which seems unlikely if the aircraft was at 88 knots, as reported by the media. In addition, the pusher should have inhibited an aerodynamic stall unless the pusher over ride button was engaged, and 20 seconds was a long time to endure an auditory stall warning.

When asked when he taught students to override the pusher Mr. Holland said the short answer was "never", unless they were in a non-stalled condition and the pusher was malfunctioning. This was unlikely because the pusher used two channels and was inhibited above 178 knots. During air work they would engage the pusher disconnect so the student could see what the crew

alerting system (CAS) message looked like, but that was the extent of pusher override training. The only reason to override the pusher in flight was if the airplane became a "bucking bronco" in cruise flight.

When asked what the best strategy if a pilot encountered a pusher activation at 300 feet, Mr. Holland stated that pusher recoveries were not taught or discussed at low altitudes (taught at 8,500 feet), stall avoidance was. A pilot should never encounter a pusher at low altitude. If a stall warning was received during the final approach segment, a missed approach procedure should be executed. That involved engaging the takeoff go around (TO/GA) button, full power, pitch up, and clean up.

Mr. Holland said if he could change something it would be the deviousness with which some people skated through training requirements. After the accident, a representative of Dr. Rosenberg's insurance company had called Mr. Holland and asked for Dr. Rosenberg's training completion certificate. Mr. Holland told them Dr. Rosenberg was not issued an initial training completion certificate from Holland Air because Dr. Rosenberg was unable to complete the course. Mr. Holland believed the he, the insurance company (Berkley), and Mr. Norton (who had provided additional checking and recurrent training) had all received different stories from Dr. Rosenberg. Mr. Holland stated that he provided Dr. Rosenberg his 157b endorsement but did not believe that anyone else provided a training certificate to meet insurance requirements. He added that he was never informed about Dr. Rosenberg's previous accident in the TBM or his previous struggles with a TBM training program. Asked whether he had the impression the insurance company thought Dr. Rosenberg had completed an initial training course, he said, "Yes. I strongly believe that." Mr. Holland said regulators drove the process but insurance companies filled the gaps. Asked whether Mr. Snyder could have issued a completion certificate to Dr. Rosenberg, Mr. Holland said no, because Mr. Snyder did not have an insurance-approved school.

Asked if he could think of anyone else investigators should interview, he said possibly someone at SimCom in Orlando, Florida, where Dr. Rosenberg had gone for TBM training in the past, and also the individual who sold Dr. Rosenberg the Phenom, because that person had also been involved in selling Dr. Rosenberg a TBM and they might be familiar with Dr. Rosenberg's pre-jet flying.

This concluded the interview at 1615.

Interview Summary

Name:	Thomas Norton, Norton Aviation LLC
Representative:	Declined representation
Location:	Telephone Interview
Date/Time:	2120, December 18, 2014
Present:	Bramble (NTSB), Brannen (NTSB), Banning (NTSB), Hoffman (FAA), Baerst (Embraer)

During the interview Mr. Norton stated the following information.

He had studied aeronautical engineering at Purdue, worked as an engineer at Pratt & Whitney for 4 years, then served in the USAF as an A-10 pilot for 10 years. He then went to work for the airlines as a line pilot and quickly became a captain and instructor.

In 2006 he left the airlines and went to work for Eclipse as the company's director of training. In that role, he obtained FAA certification for the company's simulators and received FAA approval for the Eclipse training program.

In 2008, after Eclipse went bankrupt, he started his own flight training company and obtained FAA approval for his own Eclipse and Phenom training courses. In 2009 he became a designated pilot examiner (DPE) in the Eclipse, and in 2010 or 2011 he became a DPE in the Phenom. Since then he had performed training and checking in both types.

Mr. Norton's typical customer was similar to Dr. Rosenberg, someone who was transitioning from a single-engine piston or turboprop or multi-engine piston into a jet for the first time.

Mr. Norton's flight experience was about 8,000 total hours, with about 7,000 hours in jets. He held type ratings in the Boeing 737, 757, and 767. He had about 2,400 hours between the Eclipse 500, Phenom 100, and Phenom 300, with 622 of those hours in the Phenom 100. Recently, he was mostly flying the Eclipse 500 and Phenom 100.

His company Norton Aviation LLC was based in Sarasota, Florida. He was the president and he had 12 or 13 contract instructors who worked occasionally for him for a day rate. In his DPE role, Mr. Norton reported to a principal operations inspector (POI) named Larry Enlow at the Orlando Flight Standards District Office (FSDO). There were no Phenom 100-typed inspectors in that FSDO. There were only one or two Phenom-qualified FAA inspectors in the whole US.

Mr. Norton became acquainted with Dr. Rosenberg when he received a phone call from another instructor named Travis Holland who had been training Dr. Rosenberg and was looking to schedule a check ride for him. They scheduled the check ride for April 28, 2014, and Mr. Norton showed up at Dr. Rosenberg's condo near Raleigh, North Carolina on April 27, 2014.

Dr. Rosenberg was a nice, pleasant person to be around. He was very intelligent. Mr. Norton could tell that during the oral exam Dr. Rosenberg had studied the material and he was not weak in any areas involving limitations or memory items. Travis Holland had done a good job

preparing Dr. Rosenberg for the oral exam and Dr. Rosenberg had studied well. Mr. Norton said he believed it was going to be a good checkride, and that was how it turned out.

Mr. Norton's most recent communication with Dr. Rosenberg had occurred by email in the days following some additional training they did together on September 26, 2014. The purpose of this communication was for Mr. Norton to send Dr. Rosenberg a graduation certificate for that additional training. The training and/or checking Mr. Norton had provided to Dr. Rosenberg consisted entirely of the checkride on April 28, 2014, and the training provided on September 26, 2014.

Mr. Norton was asked to describe Dr. Rosenberg's experience level. He said he did not have the records in front of him and he did not know for certain, but he thought Dr. Rosenberg had "average experience" compared to his other customers who were new to jets. He estimated Dr. Rosenberg had roughly 1,000 flight hours, and he was confident that Dr. Rosenberg had less than 4,000 hours but considerably more than 300 or 400 hours. He could not recall how Mr. Rosenberg's flight experience was documented.

Asked to describe the checkride on April 28 in more detail, he said he met Dr. Rosenberg the night before, went over the checkride schedule with him, and stayed the night in Dr. Rosenberg's condo. They began the oral examination about 0900 the next day. It lasted about 3 hours. Dr. Rosenberg knew his numbers and memory items. Nothing stood out as a fault or flaw.

They took off from KIGX about 1239, according to Mr. Norton's logbook. The airport had a 4,000 foot runway so they had discussed the importance of airspeed control and stable approaches. He made point of asking Dr. Rosenberg about his stable approach criteria and Dr. Rosenberg had recited industry standards: at 1,000 feet in instrument meteorological conditions (IMC) they should be on glidepath or on glideslope, on airspeed, and configured for landing. The same criteria applied at 500 feet in VMC. The only unusual thing about Dr. Rosenberg was that he was basing his airplane at a 4,000 foot strip. That was fairly unusual for the Phenom fleet, but it was within limits.

Nothing abnormal occurred during the flight portion of the checkride. Dr. Rosenberg met all the practical test standards (PTS) while flying all of the required maneuvers. They took off, did air work including steep turns left and right. They did approach to stall recoveries – to the stall warning – in the clean, departure flaps 1, and landing configurations. After that, they did a stick pusher demo. There was nothing abnormal about that either. Mr. Norton had been part of the flight standardization board (FSB) for the Eclipse – and the Phenom had a similar pusher demo requirement. The pusher demo had been added to training and checking to show pilots how much altitude was lost during a pusher recovery. The demo consistently demonstrated that a properly-executed recovery took 300-500 feet. Mr. Norton made it a point to show that to every applicant.

After the stick pusher demo, they did unusual attitude recoveries, both nose low and nose high. Then they performed an engine shutdown and restart in flight. After that, they did an emergency descent from 8 or 10,000 feet down to 3 or 4,000 feet. All the air work was done when they were just northwest of Kingston – at 8,500 to 10,000 feet. After that, they set up for the RNAV approach to runway 5 at Kingston (KISO) using their own navigation direct to the IAF. One of

the approaches had to be hand flown (autopilot off) inside FAF on the final segment but he could not remember on which approach this requirement was accomplished. The RNAV to Runway 5 was flown to a rejected landing. Next, they flew a published missed approach and hold. After that they flew vectors to final for a VOR 23 or a nonprecision localizer circling approach to runway 5. That was completed without a multi-function display (MFD) because Mr. Norton dimmed the brightness of the display so the MFD was no longer visible.

After a full-stop landing at KISO, they taxied back to runway 5 and performed a takeoff with a V1 cut. Mr. Norton pulled an engine back to idle at V1 and Mr. Rosenberg climbed single engine and coordinated for vectors to the ILS runway 5 which he completed single-engine. That ended in a single-engine missed approach. Next, they did another single-engine approach, the ILS runway 5, ending in a single-engine landing. They then back taxied, took off and did a visual approach and no-flap landing on runway 5 because Mr. Norton had given Dr. Rosenberg a flap fail with the flaps up. At that point they were done with the checkride, but Dr. Rosenberg wanted to stop at Harnett Regional (KHRJ) for fuel before flying back to KIGX, so they took off and flew visual flight rules (VFR) to KHRJ. After refueling, they flew to KIGX.

Asked if there was anything unusual about the airport KIGX, Mr. Norton said only that it was a 4,000 foot runway. According to the performance numbers it was doable for the Phenom, but there was a not a lot of margin for error when it came to stabilized approach and airspeed and they drilled that into all the owners. However, Mr. Rosenberg demonstrated a stable, on-speed approach to the runway at KIGX. Mr. Norton would have told him to go around if he was uncomfortable with his airspeed or stable approach criteria. Mr. Rosenberg successfully demonstrated acceptable performance again when they did his 6-month recurrent training in September 2014.

Total flight time for the check ride was 3.2 hours and the VFR flight from KHRJ to KIGX was another 0.4 hour block.

Asked to describe the pilot's performance overall during the checkride, Mr. Norton said it was good. He gave so many checkrides it was hard to remember the details, but as far as he could recall there was nothing out of the ordinary with Dr. Rosenberg. It was a standard checkride. He could not remember anything Dr. Rosenberg was weak on. Mr. Norton was impressed with how Dr. Rosenberg was able to handle landing on the short runway without difficulty. If he had experienced difficulty in that area, it would have alarmed Mr. Norton.

Asked if his overall assessment of Dr. Rosenberg's flight experience was based on his performance in flight, he said yes, and on his performance during the oral evaluation. Dr. Rosenberg was Mr. Norton's typical customer, not a shining star but also not somebody he would have asked to go get more training.

Mr. Norton was asked to describe his interactions with Dr. Rosenberg involving the September 2014 recurrent training. He said he had received a call from Dr. Rosenberg asking if he could provide recurrent training. Mr. Norton was uncertain about whether it was required for insurance purposes, but based on some emails, it seemed as if Dr. Rosenberg was a new jet pilot doing a 6 month recurrent because his insurance company was requesting it. They arranged to conduct it at

Dr. Rosenberg's house in Florida at Spruce Creek on September 26, 2014. Dr. Rosenberg told Mr. Norton he did not need a formal 14 CFR Part 61.58 proficiency check, he only needed a quick recurrent check to satisfy his insurance company but Mr. Norton decided that a 61.58-style check would be the best approach to ensure proficiency so he gave it to him anyway at a reduced price.

Mr. Norton met Dr. Rosenberg at his home and they began the recurrent training about 1000 or 1030. The training began with 4 hours of ground school. Mr. Norton had Powerpoint slides that touched on all the things they did in initial and the goal was to ask Dr. Rosenberg questions about the material, on topics such as systems and emergency procedures, to see where he might be weak That was where Dr. Rosenberg shined.

Mr. Norton had met Dr. Rosenberg briefly at a Phenom operators conference and he could tell Dr. Rosenberg was really involved in his airplane. It was waxed and cleaned and meticulously cared for. Dr. Rosenberg struck Mr. Norton as a very diligent guy who took care of his airplane, stayed up on latest and greatest on the Phenom fleet. He struck Mr. Norton as someone who had the interest of a professional pilot.

They began the flight portion in the afternoon, taking off at 1530 with Dr. Rosenberg flying the maneuvers. The weather was marginal so they ended up filing an IFR flight plan for a flight from Daytona Beach to Ocala, Florida. Once again, they had the 4,100 foot runway at Spruce Creek, so they discussed that at length – the tightness of both his home airports. Mr. Norton was very interested to see how Dr. Rosenberg handled that.

When they took off, Mr. Norton gave Dr. Rosenberg a V1 cut right off the bat with a simulated engine fire message on the CAS. Then he gave him the engine back and they did an instrument departure. On the way to Ocala (KOCF), he had Dr. Rosenberg turn off the autopilot (AP) and flight director (FD) and do Mr. Norton's "instrument crosscheck procedure" which involved flying raw data in the weather to assess the pilot's instrument crosscheck. Usually they would fly VFR but that day was IFR. Dr. Rosenberg impressed him with his ability to handle the airplane well within the PTS standards without using the AP or FD. Typically Mr. Norton's average customers were touching the edge of the PTS standards when they hand flew raw data because they did not typically do it. Dr. Rosenberg's proficiency at that was above average.

At KOCF they did a coupled RNAV approach to runway 36 to a rejected landing to the published missed approach to a hold. Out of holding, they came right back around for the LOC runway 8, circle to land runway 36. Instead of touching down they did a rejected landing. Rejected landings were common used during recurrent training to save the tires and landing cycles. After that they came back around he gave Dr. Rosenberg an engine problem (by pulling back the left throttle) with a simulated E1 fail CAS message. They then did a single-engine RNAV runway 36 to a single-engine missed approach.

Mr. Norton then gave Dr. Rosenberg his engine back and set up for what he liked to call a line-oriented flight training (LOFT) or scenario flight. He gave Dr. Rosenberg the scenario of returning to Daytona with a V1 bleed leak. Dr. Rosenberg handled that situation per the checklist. At some point, Mr. Norton typically let that bleed leak progress to an engine failure,

but they were going back into IFR weather conditions and working around some weather, so he did not do that. On the way to Ocala and the way back to Daytona, Dr. Rosenberg had impressed him because Mr. Norton literally did nothing but watch Dr. Rosenberg work around the weather and work with ATC. If they had just flown their flight plan they would have been in heavy weather and Dr. Rosenberg worked it like a pro, like he had done it before. Mr. Norton was impressed by his airmanship.

They dealt with a lot of weather on that flight. Because of the weather and the 4,000 foot strip at Daytona, Mr. Norton had just given Dr. Rosenberg his engine back for a normal approach, the RNAV runway 5 at Daytona Beach (Spruce Creek). Since it was a private field it was not in the normal government approach plates but Dr. Rosenberg gave the approach plate to Mr. Norton and they flew it.

The one thing that stood out in Mr. Norton's mind thinking back was that the runway was wet and it was a 4,100 foot strip and Mr. Norton was nervous because he was not sure how Dr. Rosenberg was going to handle it, as far as his braking technique. Everything had to be exactly perfect to make it work and Mr. Norton was ready to tell him to go around or to take the airplane. Dr. Rosenberg did such a good job that Mr. Norton told him "I couldn't have done any better." Dr. Rosenberg landed with room to spare. He was on speed, stabilized, and good on the brakes. Braking had been challenge for some customers on the Phenom and he had no problems with it. He did a fantastic job with challenging weather and a wet runway.

Asked why the braking had been challenging for some, Mr. Norton said the Phenom was brake-by-wire and initially the feedback provided to the pilot by the braking control unit was not very good, so the pilot would end up getting into left and right oscillations and have a hard time controlling the airplane. This would degrade braking performance because they would have to come off the brakes and reapply them to stabilize the situation. Embraer had released a service bulletin that addressed this issue by adjusting the pedal springs, which had resulted in better feedback, but for someone who was not used to a brake-by-wire system it could be challenging. It took a little while to get used to them. Asked whether the braking system had anti-skid, Mr. Norton said yes.

Asked how Dr. Rosenberg did performance calculations for his airplane, Mr. Norton said he believed Dr. Rosenberg had a Phenom owners group app on his iPad. Asked what services Dr. Rosenberg used to get weather information, Mr. Norton said Dr. Rosenberg used his iPad, but Mr. Norton could not recall exactly which app or site he used.

Asked whether they had covered the environmental control system (ECS), he said they had discussed it but they did not do anything with it.

Asked what they had covered for slow flight maneuvers, Mr. Norton said they had covered slow flight maneuvers during the checkride, but it was not part of his syllabus during recurrent training. He typically asked students if they wanted to do air work during recurrent training and 90% of them said they did not. He had asked Dr. Rosenberg and Dr. Rosenberg had declined. The main thing Mr. Norton wanted to see them demonstrate during recurrent training was the ability to fly raw data.

Asked to describe how effectively Dr. Rosenberg manage pitch and power, he said he just made adjustment and was stabilized at Vref by 1,000 feet agl. Mr. Norton remembered vividly that Dr. Rosenberg had been very aware of the importance of executing a stable approach to a short runway.

Asked to describe whether he had covered icing or use of anti-ice during the checkride or recurrent training, he said icing had been covered during the oral portion of the checkride. Special emphasis items included identification of ice and knowing that there was an increased activation speed for the stall warning and pusher systems when the boots were on, as indicated by a CAS message. Mr. Norton had not demonstrated this during the checkride or recurrent training, but he had discussed it during the oral portion of the checkride.

Mr. Norton was asked to describe Dr. Rosenberg's use of checklists. He said he did not recall in detail. Nothing had alarmed him. He could not recall if he saw him pulling out pieces of paper or putting them away, but the checklists had all been completed.

Asked to describe Dr. Rosenberg's navigation skills, Mr. Norton said they were very good. He was impressed with his ability to navigate around the weather, particularly his knowledge of how much to deviate and still get back to Daytona with minimal impact on the flight overall.

Asked to describe Dr. Rosenberg's crosschecking and monitoring skills, he said that was a tough one. He did not recall any specific events where Dr. Rosenberg had missed something. His performance at flying the airplane using raw data had been above average.

Asked to characterize Dr. Rosenberg's aeronautical decision making he said he had observed no deficiencies. He had demonstrated good navigation and control of the airplane and good negotiation with ATC during the flight back to Daytona. He had been impressed with how Dr. Rosenberg had navigated around the weather.

Asked to evaluate Dr. Rosenberg's communication and coordination with him in the cockpit, he said it had been fine.

Asked about Dr. Rosenberg's overall attitude toward safety, Mr. Norton said Dr. Rosenberg seemed very meticulous when it came to the care of his airplane and his training. He was embracing the 6-month recurrent training, actually looking forward to it. He was excited about getting in the airplane with Mr. Norton again. Typically, Mr. Norton was the instructor most pilots did not want to fly with because they associated him with their checkride, but Mr. Norton had been Dr. Rosenberg's first choice for a recurrent training instructor. That told Mr. Norton that Dr. Rosenberg was interested in getting the training and wanted to be a better pilot, that he wanted to be safe.

Mr. Norton was asked to clarify whether the pilot used physical checklists or whether most of the emergency procedures in the Phenom involved memory items. Mr. Norton said some of the emergency procedures were memory items, and some were not. Typically when he threw an emergency at someone it was a CAS message associated with an emergency checklist. Pilots

would always pull out checklist in front of him as examiner and if not he would prompt them to do so. He did not remember having to do that with Dr. Rosenberg. Every emergency he gave Dr. Rosenberg, Dr. Rosenberg had pulled out the appropriate checklist for the CAS message. Mr. Norton was not sure about the normal checklists, but he knew Dr. Rosenberg had referred to the physical checklists for the emergency procedures.

Mr. Norton was asked who administered his 61.58 PIC proficiency checks on the Phenom and he said he had completed one at CAE. His latest one had been administered to him by a DPE in the Boston area named Neil Singer. Mr. Singer had an inspector from the FAA observing him when he was doing Mr. Norton's checkride. He normally completed his own training in the airplane.

Asked whether his company sometimes hired instructors to provide training for students he subsequently checked as a DPE, he said yes. Asked what airplanes his company used to train customers, he said they trained solely in customers' airplanes.

Mr. Norton was informed that N100EQ had been used by him to do several other checkrides. He commented that that was interesting and he would have to check his logs to see who the students were. He did not know who Dr. Rosenberg had bought it from.

Asked whether Travis Holland was the instructor who had signed off for Dr. Rosenberg's checkride, he said yes. It was just an endorsement that Mr. Holland had provided, per 14 CFR Part 61.57. Mr. Holland did not actually sign the back of it, he just provided the endorsement.

Mr. Norton was informed that records indicated he had given a checkride to Kevin Snyder in N100EQ. He commented that Mr. Norton was a training entity like himself, but Mr. Snyder also brokered airplanes. He would typically bring them over from Europe and he would be selling it but he might lease it to a student Mr. Norton was training or checking. It might have been one of those.

Asked whether Dr. Rosenberg had used the glidepath function during any of the RNAV GPS approaches, Mr. Norton said yes, Dr. Rosenberg would have coupled to it. Both of the approaches had been LPVs. One was required to be hand flown inside the FAF and Mr. Norton had allowed Dr. Rosenberg to pick which one – a VNAV or a circling approach.

Mr. Norton did about 15-20 type ratings in the Phenom and 50-60 type ratings in the Eclipse per year. He had only given one Phenom two-pilot type rating. It was very unusual for a customer to want a two-pilot type rating.

Asked whether Dr. Rosenberg had been a member of Phenom owners association, Mr. Norton said yes. He did not know if Dr. Rosenberg was on the roster, but he had seen him at the annual meeting of that association in Coeur D'Alene, Idaho in 2014. They had a lot of safety briefings at those meetings. Neil Singer and Mr. Norton had given a lot of briefings on procedures and safety issues and Dr. Rosenberg had been at the meeting.

Asked where he got the syllabus for the training he gave in the Phenom, Mr. Norton said he came up with it on his own. He did not know what Mr. Snyder based his training syllabus on, but

it was extremely thorough, even more thorough than Mr. Norton's. It went beyond the FSB requirements.

Mr. Norton was asked if he had talked with Dr. Rosenberg about the pusher cutout switch. Mr. Norton said only as it applied to asking him what the memory item was for that.

Mr. Norton was asked when he trained students to begin their recovery from a stall. He said at the first indication, which was stall warning. The Phenom had a fairly conservative system, based on his experience. In the landing configuration with full flaps and gear down the stall warning would come on about 5-7 knots above the aerodynamic stall and the pusher would fire at or just above the aerodynamic stall. When the stall warning began, the airplane was very controllable. At onset, the airplane recovered very easily with the application of power.

What they taught in training and he looked for when examining a pilot was to see the nose break to reduce angle of attack (AOA) while power was simultaneously applied. In a Phenom one could actually recover by just applying power, during checkrides he liked to see a reduction in AOA as power was applied and then a return to the starting altitude. In a clean configuration, that meant typically a 50-foot altitude loss. In a dirty configuration, it meant a 50-100 foot loss.

First indication of stall was the aural warning. The speed tape red bar would intercept the current speed and the speed number would turn red. Also the FD and AP would disconnect. That had been a PTS change – one recovery had to be done starting with the AP engaged. Typically that was done in the clean configuration. The applicant maintained altitude with the AP on, set the power to idle, and then recovered after the onset of stall warning. The AP would kick off and the FDs would go away simultaneously with the stall warning.

Asked whether he had an applicant perform the stalls in IMC or VMC during checking, he said, he did it VMC and preceded the maneuver with clearing turns, but he had the applicant under the hood for the entire approach to stall maneuver.

Asked who flew the stick pusher demo, him or the student, he said the student did. It was not a special emphasis item under the PTS. The maneuver just came from the FSB under special flight characteristics. It had no PTS standards. They just had to demonstrate it. Instructors did it in training and during the checkride. The student did the whole thing. He flew it.

Typically they did the stick pusher demonstration in the clean configuration during a checkride. The student would bring the power back to idle and maintain altitude with pitch. At the onset of stall warning, the FDs would go away. The student would maintain high pitch throughout the warning until the pusher activated, and then they would recover. The student was the one with hands on the controls during the maneuver.

Mr. Norton was asked whether Mr. Singer had provided any training to Dr. Rosenberg and he said he did not think so. Asked why Dr. Rosenberg might have been carrying around laminated reference cards made by Mr. Singer, Mr. Norton said that Mr. Singer had put those together and Mr. Norton passed those out to his students. It was a summary of limitations on one page and a

summary of quick reference handbook (QRH) memory items on another. It was interesting because the number of items in the QRH did not match the AFM. The QRH had more items.

Asked whether he had provided the laminated cards from Mr. Singer to Dr. Rosenberg, Mr. Norton said that he might have given such materials to Dr. Rosenberg during recurrent training. He stated that Mr. Holland gave out a very thorough set of laminated checklists and other materials during initial training, so if Dr. Rosenberg had laminated materials they likely came from Mr. Holland. However, Mr. Norton would have provided Dr. Rosenberg with him Mr. Singer's 1-page summary of limitations and 1-page memory item sheet during recurrent training.

Mr. Norton was asked to confirm whether Travis Holland was associated with Norton Aviation, and he said Mr. Holland was not. Asked whether Mr. Norton knew him, however, and recommended him as an instructor in certain cases, Mr. Norton said yes.

Asked whether the MFD went into a reversionary mode when Mr. Norton did the simulated failure with that, Mr. Norton said that the PTS called for an instrument failure. The standards were originally written for round-dial airplanes. They had been updated to include technically advanced airplanes like the Phenom, however, they still wanted to see some sort of instrument failure. That was difficult to do in the Phenom because instructors were not supposed to pull any circuit breakers. The only way to get a pilot to look somewhere they were not used to looking was to fail the MFD. The checklist said that if the MFD failed without reversion the AP would turn off. It would not actually go off automatically during Mr. Norton's simulated MFD failure, so that was not totally realistic. Asked how he initiated the simulated MFD failure, Mr. Norton said he would pull up a menu and dim the MFD.

Asked to clarify how Phenom pilots were taught to recognize icing, he said icing recognition was required under special emphasis items. The checkride oral discussed de-ice boots and how they were used. In recurrent training he would tell students the story about some pilots in Africa who turned on the de-ice boots at 40,000 feet and the results of that action. He did not specifically recall telling Dr. Rosenberg that story, but he always relayed it to students. There was a danger if one turned the boots on, one would not have the ability to go to normal Vrefs. The pilot had to raise the speeds because if they did not they would go to stall warning and stick pusher.

Asked whether he would have asked Dr. Rosenberg about ice recognition during the oral exam, he said yes, it was a special emphasis item. The pilots were taught to look at the wings. Asked if there was any other special "tell" on the Phenom, such as a spot on the windscreen, Mr. Norton said no, not unless the icing was really heavy. The first sign of ice was a white line on the leading edge of the de-ice boots.

Asked if there was anything other information he had not been asked about that he could provide that might be useful to the investigation he said no. Asked if he could think of anyone else investigators should interview, he said Travis Holland, and Kevin Snyder who did touch-up training to keep Dr. Rosenberg proficient up to the day of the checkride.

This concluded the interview.

In a follow-up email communication, Mr. Norton stated that he had completed the following activities in his role as a DPE for the years 2013 and 2014.

- Phenom 100 Type Ratings= 20
- Phenom 100 61.58 PIC checks= 19
- Eclipse 500 Type Ratings= 30
- Eclipse 500 61.58 PIC checks= 94

Interview Summary

Name: David Brown, Line Service Technician, University of North Carolina Horace Williams Airport
Location: Telephone Interview
Date/Time: December 9, 2014, 1613-1633
Present: Brannen, Bramble, Banning

During the interview, Mr. Brown stated the following information.

He had been working at Horace Williams Airport since September, 2014, about two and a half months.

Mr. Brown believed he was the only person to interact with the pilot at Horace Williams Airport when the pilot departed on the accident flight. He said that the pilot called the airport and said that he was going to depart about 0930 and that he would be getting fuel.

Mr. Brown said that he opened the hangar and brought the airplane tug over to the hanger. He commented that Mr. Brown only entrusted tugging the airplane to a few people and that he was not one of them.

When the pilot arrived at the airport, the pilot attached the tug, pulled the airplane over to the fuel pumps and asked for 40 gallons. Mr. Brown then added fuel to the airplane while the pilot monitored the fuel gauge. Mr. Brown added 20 gallons of fuel to each wing fuel tank. He did not know how much total fuel the airplane had after fueling but he did not believe it was full.

Around this time, the two passengers showed up and Mr. Brown left with the tug. The airplane departed around 0940-0945.

Asked whether he had interacted with the pilot before the accident day, he said yes. He had talked with him a few times. Normally the pilot liked to have whoever was working at the airport help him spot the aircraft when he pulled it out of the hangar so would not clip the wing or the tail. Mr. Brown typically spotted for him when he was working. They had talked a little bit when he was doing that, but that was about it.

Asked whether anything seemed out of the ordinary with the pilot on the morning of the accident, he said no, the pilot was in a bit of a hurry but he thought the pilot just had a deadline up in DC. Although he was in a bit of a hurry didn't seem like he was being careless. He seemed to take all the precautions with the aircraft. He was not as talkative as some of the other pilots.

Mr. Brown's impression of the pilot was purpose-driven when he came to the airport. He normally just pulled the airplane out, preflighted, and departed, he did not normally have extensive interactions with others. On the morning of the accident, the pilot was not more or less talkative than usual and he did not seem like he was in more of a hurry than usual.

Mr. Brown normally only worked Fridays and the last time he had seen the pilot at the airport was maybe two weeks earlier.

Asked whether, on the morning of the accident, the pilot had discussed where he was going and what he was doing, Mr. Brown said no. The two passengers might have been from the pilot's company and they might have been going to do some business. They did not discuss it with him.

Asked how the other passengers appeared, he said they seemed perfectly relaxed when getting on the airplane. The pilot offered to allow one of the passengers to sit in the cockpit during the flight. Mr. Brown said that he did not know the passengers' names, but one passenger appeared to be caucasian and the other appeared to be African-American. The Caucasian passenger was the one that got into the cockpit. The pilot was seated in the left cockpit seat, and the caucasian passenger was seated in the right cockpit seat.

After helping the pilot fuel the airplane, Mr. Brown moved another airplane, closed some hangars, and performed some other tasks. During this time, he believed the pilot was performing the preflight inspection of the airplane, however, Mr. Brown did not witness the preflight. He was putting the tug away. By the time he came back out, everyone was in the airplane and they were starting it up.

At the time of departure, the weather was cool, a little overcast, but the cloud cover was fairly high.

Asked whether he saw the pilot get weather information at the airport or engage in any other flight planning activities, he said he did not know. The airport did not have a computer and most of the pilots used their own resources.

Asked whether he was aware of any information that might be useful to the investigation that he had not been specifically asked about he said he could not think of anything that seemed overly out of the ordinary. Whatever happened might have happened closer to Maryland, but that was just his opinion.

Mr. Brown said he wanted to clarify that he did not think the pilot was too rushed to be thorough with his preflight activities.

This concluded the interview.

Interview Summary

Interviewee:	Wife of Dr. Michael Rosenberg
Representative:	Mike McQuillen (Adler, Murphy, and McQuillen)
Time/Date:	1000, December 24, 2014
Location:	Telephone Interview
Present:	William Bramble (NTSB) and John Brannen (NTSB)

During the interview, the pilot's wife stated the following information.

She was employed at Health Decisions in special projects. She was not a pilot. She had been married to Dr. Rosenberg since late April, 2014. She resided in Chapel Hill, North Carolina. She and the pilot maintained separate households in Chapel Hill. The pilot did not have any young children living at home with him. His two children were adults. His ex-wife and one adult child lived in the Washington, DC area, and another adult child lived in Texas.

Dr. Rosenberg had M.D. and M.P.H. degrees. He was the CEO of Health Decisions, a company he founded more than 25 years before the accident. Health Decisions was a clinical research organization involved in the development of drugs and medical devices.

The pilot's wife described the pilot's recent activities.

On Friday, December 5, 2014, they were both at work. After work, they initially went to their respective homes and the pilot later came to her residence between 1900 and 2000, which was routine for them. They engaged in routine activities at home that evening and likely went to sleep around 2200-2230. As far as she knew, the pilot did not have any difficulty sleeping.

On Saturday, December 6, 2014, they woke between 0600 and 0700, which was routine for them. On either Saturday or Sunday morning they went to a gym where the pilot attended a 0800 spin class. Saturday was more likely. If they did not go to the gym Saturday, they exercised at her residence for 30 minutes. After exercising, the pilot and his wife went to their respective residences. It was routine for them to be apart during the day. She did not know the details of Dr. Rosenberg's activities that day, but she believed he was working. He would occasionally send her routine emails. Nothing stood out. Saturday night, the pilot came to her house between 1900 and 2000 around dinner time and stayed at her residence overnight. He likely went to sleep between 2200 and 2230. As far as she knew, he did not have any difficulty sleeping.

On Sunday, December 7, 2014, they woke between 0600 and 0700. They likely exercised at home for 30 minutes, then parted for the rest of the day again. She did not know the details of his activities during the day, but she believed he was working. Nothing stood out. They met again at her residence between 2000 and 2100 and engaged in routine activities around the house. The pilot likely went to sleep between 2200 and 2230. As far as she knew, he did not have any difficulty sleeping.

On Monday, December 8, 2014, they woke a bit early, between 0600 and 0615, because she had an appointment at 0730. She did not recall Dr. Rosenberg saying anything about the quality of his sleep. It just seemed like every other night. The pilot departed her house a bit earlier than normal because he was flying that morning. He was in a good mood and seemed cheerful when he said goodbye.

The pilot's normal daily sleep habits were to go to bed between 2200 and 2230 and wake between 0600 and 0700. Asked how many hours he needed to feel rested, she said that was the sleep schedule he had maintained for years. She thought he needed 6-8 hours of sleep. He did not normally snore, exhibit difficulty falling asleep at night, or have difficulty remaining awake during the day. He had not been diagnosed with any sleep disorders.

Dr. Rosenberg normally drank a cup of coffee in the morning, ate lunch mid-day, and had dinner in the evening. Sometimes he would eat breakfast on weekends. His leisure activities included exercising. They liked to go the gym every other day, but they were not always consistent. On non-gym days they would exercise at her house. Aviation was a passion for him, so he engaged in that as well. He sometimes enjoyed going out to dinner with friends. They had their routines after being in a relationship for 12 years. There had been no recent changes in his personal habits.

The pilot's normal daily work schedule was 0730-1800 Monday-Friday. He maintained similar hours on weekends, reading and writing articles and sending emails. He often worked full days on the weekend. She did not know what breaks he took. He did not normally go to the office on weekends. Asked to describe the pilot's last vacation or extended time off, she said she did not know. He often tacked on an extra day or two when traveling for work and he sometimes would visit his father in California. He also went frequently to Florida where he had a home in a fly-in community called Spruce Creek, located in Port Orange. Asked what proportion of his time the pilot spent in Florida, she said he spent a lot of time there but she did not know how much. The Florida home was his official residence.

In the 12 months before the accident, there had been no significant changes in the pilot's finances, personal life, or health. His mother had died in 2013 after a long illness, but it was expected, and he handled it well.

The pilot was very healthy. He regularly attended an hour-long spin class. He never complained of any ailments. He had recently had a routine physical exam with a new doctor in North Carolina. He did not have any medical conditions that she was aware of and he had not experienced any illnesses such as a cold or flu, in the days before the accident. He was not on any prescription medications. Asked whether, in the 72 hours before the accident, he had taken any medications, prescription or nonprescription, that might have affected his performance during the accident flight, she said none that she was aware of. Asked whether the pilot drank alcohol, she said rarely. His last consumption of alcohol was likely a glass of wine with a meal on Thanksgiving. Asked whether he smoked, she said no.

Asked how the pilot got interested in flying, she said he had loved it since he was a child. His father had taken him to the airport when he was young. He liked everything about it. He enjoyed studying aviation and talking with other pilots. He had never mentioned anything that he disliked about it. He had no aviation work history. He had owned a TBM before he purchased the Phenom.

The purpose of the accident flight was a business meeting with the National Institutes of Health (NIH). Health Decisions did some work for NIH. She did not know with whom, specifically, the pilot was meeting. Asked whether Dr. Rosenberg was the principal officer of Sage Aviation, LLC, she said yes, she had recently learned that. Asked about the pilot's relationship with the other two occupants, Mr. David Allen Hartman and Mr. Chijioke Ogbuka, she said Mr. Hartman was a consultant. She did not know how long the pilot had known him. Mr. Ogbuka was a staff member. He had begun working for the company fairly recently. She thought he had worked as contractor for a number of months before becoming a staff member a couple of months before the accident. Mr. Ogbuka worked in regulatory affairs. She was not sure exactly what he did. She did not know if Mr. Hartman or Mr. Ogbuka was a pilot.

Asked to recall the pilot's most recent aviation training activity, she said she did not know for certain. He had done some training in South Carolina a month or two before the accident. She did not know exactly what it was. Asked if she knew who his instructors were, she said she had never met them and she did not know. She had asked someone at the airport who knew about that and they had passed along some information to the NTSB. Asked how often the pilot had been flying in recent months, she said she did not know. Nothing seemed out of the ordinary. He had flown, but she could not say how many times. Asked if she knew of any flying buddies he might have had, she said no. Asked if she could recall the last time she had been flying with the pilot, she said she had gone flying with him 2 to 4 weeks before the accident. They had flown to Daytona Beach for a long weekend. Asked whether the pilot had used a call sign other than N100EQ during that trip, she said she did not know. Asked how the pilot documented his flight experience and training, she said he maintained a spreadsheet on his laptop. She had seen him looking at it before. It could have been a web site, but it looked like he was using an Excel spreadsheet.

Asked whether the pilot had encountered any prior unusual or abnormal situations in aviation, she said yes, he had experienced a previous accident in Gaithersburg about five years before. She was not present during that accident, but she understood that he had had an accident on the side of the runway. The only other thing she could think of was in July or August when one of the landing gear tires had blown out as they landed at the Chapel Hill airport. The pilot subsequently told her that there had been a momentary catch in one of the brakes. Embraer service personnel came out and fixed the tire the next day.

Asked whether the pilot maintained any paper pilot logbooks or records, she said she did not know. The FAA had asked about maintenance records and she had been able to locate half a box of records in the airplane's hangar. Those had already been provided, but they only covered the years 2008-2013.

Asked if she could recall anything about how her last flight with the pilot had gone and if he had seemed comfortable in the airplane, she said she could not recall. Asked if she could recall anything at all about the flight home from Daytona Beach, she said she could not recall anything that seemed out of place during the flight.

Asked whether there was any other information she could provide that she had not specifically been asked about that might help investigators understand the circumstances of the accident, she said no. Asked if there was anyone else who had not been interviewed who she believed investigators should speak with, she said no.

This concluded the interview.

Interview Summary

Interviewee:	Pilot's adult son
Representative:	Mike McQuillen (Adler, Murphy, and McQuillen)
Time/Date:	1130, January 15, 2014
Location:	Telephone Interview
Present:	William Bramble (NTSB) and John Brannen (NTSB)

During the interview, the pilot's son stated the following information.

He resided in Washington, DC. He worked as a copy editor. He was not a pilot. He did not have any formal flight experience.

He spoke with his father every couple months. He could not evaluate his father's flying ability, but he knew him pretty well on a personal basis. His father lived in Florida and maintained an apartment in North Carolina. He did not have any detailed knowledge of his father's activities in the days before the accident. They exchanged emails the week before the accident about having dinner together during the pilot's trip to DC, so he called his father the morning of the accident and confirmed that they were meeting that evening. His father sounded normal. The conversation was routine.

He was not aware of any recent changes in his father's personal habits. He did not have knowledge of father's work schedule, normal days off, or last vacation. He did not know when his father bought the house in Florida or how often he went there.

His father had been interested in aviation since childhood. He did not know the details of his father's aviation history. His father had owned the Phenom through Sage Aviation. He had previously owned two different TBMs and two or three Mooneys. He did not know why his father had bought the Phenom or what his father liked, disliked, or found challenging about the airplane. He did not know how often his father had been flying in recent months. He did not know if his father maintained any paper pilot logbooks. He had no knowledge of his father's recent training activities, instructors, or flying buddies.

He had ridden with his father aboard the airplane when his father ferried it across the Atlantic from France. That was the only time he had ridden aboard the airplane. Their route had taken them from Le Bourget in Paris to Scotland to Prestwick, to Keflavik, to Greenland, to the Canadian coast, to the Canadian interior, to another Canadian airport just north of the U.S. border, and to Portland Oregon where they cleared customs. After clearing customs they flew to Seattle. At that point, he took a commercial flight home while his father remained in Seattle. A French pilot had operated the plane during ferry trip. The trip had gone smoothly and been enjoyable.

He did not know about his father's plans to become trained in the operation of the Phenom. He did not know which seat his father occupied during the ferry flights, but his father had ridden in the cockpit. He did not know how comfortable his father felt in the airplane but his

father never expressed any doubts about it. He did not see how checklists were being utilized in the cockpit by his father or the French pilot because he was seated in the main cabin.

He was aware of his father's past accident in the TBM. He did not know whether his father had encountered any other unusual, abnormal, or emergency situations in aviation.

The purpose of the accident flight was for his father to attend a business meeting in the Washington, DC area. He did not know who his father was meeting or what it was about.

Asked if he knew why his father might have used an incorrect N number when filing an instrument flight plan during a previous flight in the accident airplane, the pilot's son said he did not know that had occurred and he had no knowledge of it.

When asked if his father had experienced any significant changes in his finances or his personal life in the year before the accident, he said yes, his father had married Alicia Paladin. He did not find out they were married until the day of the accident. He did not know why his father had not told him about the marriage.

Asked whether his father had been involved in any recent non-aviation incidents or accidents, such as an automobile accident, he said he was not aware of any.

As far as he knew, his father's health was excellent. His father did not have a history of any medical conditions, and he was not suffering from any minor illnesses the week of the accident. He said he did not know if his father was regularly taking prescription medications, or whether, in the 72 hours before the accident, his father had taken any medications, prescription or non-prescription, that could have affected his performance during the accident flight.

His father rarely drank alcohol. The last time he had seen him drink alcohol was years ago when they had split a beer. Asked if his father smoked, he said no.

Asked whether there was any additional information he could provide that could help investigators understand the circumstances of the accident, he said no. Asked whether there was anyone else he believed investigators should interview, he said Ms. Paladin.

Asked whether his mother might have additional knowledge of his father's recent activities or recent flight experience, he said no. His mother and father had been divorced for a decade.

This concluded the interview.