Docket No. SA-531

Exhibit No. 2-C

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Operations Group Chairman
Interview Summaries of Vermont Incident Crew

(10 Pages)

Interview:	**Salman Y. Contractor, First Officer**
Date/time:	**12 March 2009, 1450 edt**
Location:	**NTSB Conference Center, Washington DC**
Present:	**Cox, Byrne, NTSB; Crook, Dittmar, Colgan; Wickboldt, ALPA; Conway, FAA; Simpkins, Bombardier; Webster, TSB-C**
Represented by:	**Jeffrey Loesel**

During the interview Mr. Contractor stated the following information:

Age 23. Currently a first officer on the Q400 at Colgan. He has been on the Q400 since about May or June 2008 – about 10 months. During that time he has accumulated about 450-500 hours on the airplane. He started with Colgan in April 2007. Total flight time about 1550-1600 hours.

He described the event. They were descending into BTV. He remembers they were on level 2 icing when coming in. And on the descent he remembers he had gone onto the second radio to call in range and before that had consulted with the FA's for any specials. He called in range, they were descending. They broke out of the clouds. They were being vectored for a visual approach to runway 15. He was looking for the airport and thought he had it but wasn't sure. They were being vectored around and then he had the beacon and called airport in sight. Cleared for the visual approach. At that point they started configuring. He was running the before landing checklist somewhere on a downwind. He heard a noise. He had his hand on the checklist. He looked up after hearing the noise. Saw the speed was in the red. He immediately called out airspeed. Captain immediately responded by putting throttles all the way forward. The sound stopped immediately. They were in a descent during the time. They were stable during the event and afterwards. They then landed in Burlington without further incident.

They were coming in from EWR. He doesn't recall the cruise altitude. The captain was the one who turned the icing on to level 2 which is engine intake bypass doors open, pitot static switches selected on, prop heat on, increased ref speed switch on, and windshield heat selected to norm. He doesn't' remember the altitude it was turned on – but said it was way before – it was on after the climb out from EWR. He said it was on because earlier in the flight there were icing conditions.

The captain did brief him. The captain requested that he get both speeds for icing and non-icing. In the briefing the captain said that since the weather at Burlington is visual and it is getting warmer as they descend, she would use the non-icing speeds. She would go back to level one. However at the time they were still at level two.

Level one is the engine bypass doors and the 3 pitot static switches only.

She did not brief on when she would go back to level one.

He entered the data into ACARS and requested both icing and clean speeds. Icing speed Vref was 140 or 141. He said the non-icing Vref was 119 or 118 – around 120 he surmised. He did not recall the gross weight. He wrote the speeds on the TOLD card.

Flight conditions – higher it was worse, lower it was better. Around that altitude it was +1. High overcast. They broke out about 6000. The ATIS – doesn't recall the exact temp. Does recall it was above freezing, 5500 broken and 10 miles visibility.

He called the field in sight about 10 miles from the airport -- within ten miles. He said they were still talking to approach control – but he was not 100 percent positive. Approach switched them to the tower. Tower cleared them to land. Tower did not say anything other than cleared to land.

He said it was a right downwind they flew to runway 15. That's why he called the airport first it was on his side. He showed the beacon to the captain – who wanted to wait a bit before they called it in sight. Once she saw it they called it in sight.

They did not have icing conditions as they were maneuvering near the airport.

The descent checklist was done before the descent. The approach check was done just before getting vectored. The before landing checklist was being started as they entered downwind.

He was asked whether there was a checklist item for deice on or off – He said it was not an item on the approach or before landing checklist. There is a reference to speed bugs on the approach checklist. The bugs check is where you check what you have set – and you cross check it on the other side. That's the last check of the speed bugs – during the approach check. They were above 5000' and more than 20 miles from the airport when they did this checklist. There were no distractions that he remembers occurring during this time.

He doesn't remember where the flaps 5 configuration was done. On downwind gear was called for and he put the gear down. Flaps 15 called for and he did that. Then he was asked for the landing checklist. Captain was turning base as he was doing the checklist. He said the shaker went off on downwind to base. The plane was level, not turning, and they just completed the base turn. They were at least 1500 feet when it happened – over 1000 AGL. He doesn't remember the field elevation.

They were a little extended – their downwind to base turn. They didn't at all feel pressured. Everything looked good as far as altitude. Runway 15 has an ILS and it was tuned up and the flight directors were set up to follow it. It had not captured yet.

Adequate cues to do the approach? He agreed with the reported visibility. The captain had the runway and had the airport in sight. Once the captain acquired the airport she knew where she was going.

He did not notice where the captain was looking when they made the turn from downwind to base. Figured she was looking inside and out.

Not sure the airspeed normally required for traffic pattern. Thinks they fly ref+5 on approach. Most captains fly ref plus something. Normally whatever they get – they don't brief the speed they're going to fly.

Duration of the shaker was very short. He didn't time it. He said it was less than 5 seconds, a lot less than that. He immediately looked up off the checklist, saw the airspeed, and called out airspeed.

After the event, he backtracked on the checklist because he forgot where he was, so went back to landing gear down three green, which he had done, and then resumed the checklist to be safe.

For flaps 15, a good speed would be 150-ish at that point on the base leg. But he said he doesn't normally land flaps 15, he lands flaps 35.

He called airspeed captain applied full power. He didn't notice any significant change in the airplane's pitch. They were in a gentle descent the whole time. They had the glide slope indication and were pretty much on it.

He completed the before landing checklist. Doesn't recall saying anything after that. Immediately when he called airspeed, after she applied power, and they were stable, it popped into his head immediately and he looked up at the increased ref speed switch on, and he said something about it. He doesn't know specifically what he said.

He hasn't seen that before – that someone had left the increased ref speed on. Airspeed in was in the red when he saw it.

He believes the captain said oh shit. Then after he pointed out the ref speed increase switch, the captain asked him what the speed was for icing. He read out the speed for icing on the TOLD card – which was 140. He said the speed at the shaker event when he looked up, the speed tape was in the red and the number was 134.

He thought about the need to go around for a second, but saw they were stable, on glide slope, it was a very quick thing and they were already stable so he figured don't say anything about that.

It was the captains choice to land flaps 15, he didn't know the reason.

He didn't remember if the captain made callouts during the recovery.

Did not recall seeing the low speed cue before the shaker. Does not recall seeing the trend vector.

They were both on the last flight of day 2 of a 4 day trip. Paired together for the entire sequence.

Before descent the captain did the approach briefing.

He said the check airman said nothing during the event.

He had flown with the captain before. Two four-day trips. He described her performance as unremarkable prior to the shaker event as compared to past flights he had with her.

In the traffic pattern the captain said something along the lines that she would bring it out a little bit more, turn the airplane. The check airman said nothing during this phase.

CRM and communication from the captain was good. She'd verbalize everything. Let him know what she was doing. Include him in everything she was doing. Thorough briefings.

He believed the check airman was doing a line check on the captain.

The aircraft did not go through the runway extended centerline during the event or recovery. They made a normal turn towards the runway without any backtracking to the centerline.

Speeds he bugged were the normal speeds. Captain requested bugging non ice speeds in her briefing.

On a visual approach there's no height above the ground call out. Only criterion for visual is stable by 500 feet AGL.

There was a memo out for the increased ref switch – that the minimum you can select it off is above 1000 feet AGL.

Interview:	**Bruce Reffett, Check airman/Captain**
Date/time:	**12 March 2009, 1235 edt**
Location:	**NTSB Conference Center, Washington DC**
Present:	**Cox, Byrne, NTSB; Crook, Dittmar, Colgan; Wickboldt, ALPA; Conway, FAA; Simpkins, Bombardier; Webster, TSB-C**
Represented by:	**Jeffrey Loesel**

During the interview Captain Reffett stated the following information:

He has been a check airman approximately 3 and a half years. He has flown the Q400 since March 2008.

From TOD he described the event sequence. The captain and FO had briefed the approach. They had received ice speeds and non-ice speeds. They had decided to use the non-ice increment speeds. On descent into BTV, the controllers asked if they saw the field. They were approximately 10-12 miles out at the time. The crew reported negative contact with the field. About 8 miles out, the crew called the field in sight and were cleared for the visual approach into runway 15. After descending to pattern altitude, 1500 feet above the ground, the crew extended downwind, were cleared to land, they were configuring the aircraft with gear down and flaps 15, completed the landing check, turned final, and were waiting for the VASI or glideslope to come in to follow the glide path down. Just before intercepting the glide path, the stick shaker momentarily engaged. At that time, captain Shah corrected by adding power and gained approximately 150-200 feet, reestablished a stabilized approach, and continued with the landing uneventfully. They taxied to the gate, set the parking brake, and deplaned the people.

Flight departed EWR on 10 March in the evening. They landed about 2230 but he wasn't 100 percent sure. Flight conditions at Burlington were VFR, more than 5000' ceiling. There was no icing on the aircraft.

The deicing equipment was being used. Level 2 was being used. By that he meant the addition of the increase ref speed switch, the props, and the windshield heat. The level 2 procedure came into effect about 3 weeks ago. The deicing boots were not in use.

Captain was the pilot flying. She briefed she would use the non-ice speeds. The Vref was in the upper 120's he said. He said the gross weight was about in the 50 thousand range – they were completely full.

The last speed he 100 percent recalls would be about 165. He said that was on base to final. Was not able to see the low speed indicator at 165.

On base to final he was concerned for the proper use of landing speeds. He felt the speed at 165 on base-to-final was the appropriate speed at the time. The altitude was about 1500 feet when they turned final.

He doesn't recall the exact altitude when the shaker went on. They were about 4 miles from the airport at the time of the shaker. The duration of the shaker event was "minute." He noticed a speed of approximately 130 when the shaker went off. He looked at the captain's airspeed. The low speed cue was visible at that time when the shaker went off. The airspeed indication was within the low speed cue at that time – it had to be.

The first officer did not make any call outs at that time. The captain increased power and corrected the situation. All the captain said was oh shit.

He did not observe the airplane actually stall. The airplane was stable. He does not recall the exact power setting. They were approximately 10-15 percent torque.

The captain turned the deice system to level 2 approximately 13000 feet. Captain did not say why she turned it on. They were not in icing conditions when that happened. He said turning the system to level 2 when not in icing conditions was not standard Colgan procedure.

After landing, the captain was very upset. He discussed the shaker going off, and his position was it would have to be reported. He was conducting a one-year line check. The captain was told the check ride was unsat. Both pilots, the captain and the first officer were present at the debriefing.

Except for the shaker event his assessment of her performance was satisfactory on the line check. Other than the shaker there were no airspeed control issues that came to his attention.

During the event it was over so quickly that he did not have time to say or get anything done. His reaction was to push the power forward but he can't reach it.

He said it would have been appropriate to go around. But he did not feel the airplane was at an unsafe condition after the recovery. The flap setting was 15.

The autopilot was off on downwind leg. Captains hands on the control column and power levers.

He felt the first officer was looking for traffic as the airspeed slowed from 165 to 130. There was no ATC traffic call out. Does not recall other traffic operating in the vicinity of the airport. No recall of any indications of traffic on the TCAS system.

The checklists were completed. Not ongoing at the time of event.

Sterile cockpit was observed. She was not talking. FO was not talking. Notification chimes to the cabin had already been made.

He thought the reason to extend downwind was to have a more stabilized approach.

He said there were no distractions or interruptions.

As a pilot had not flown with the captain before. Had flown with her as a LCA doing a line check on previous aircraft. Can't compare past performance.

He said his attention as the aircraft slowed from 165 to 130 was watching many parameters -- Including outside, and the visual state of checking the gear was down and the flaps were proper.

They were not rushed or hurried. There was no delay on departure. On time arrival.

He said about 15-25 percent torque was applied during the recovery.

He said there wasn't a cloud deck between 13000 and 5000 feet. It may have been scattered clouds though.

He said they would normally bug the ice speeds if the increased ref speed switch is on. His thinking was she would shut the switch off before turning final and slowing the aircraft. He said when to turn it off depends on the weather conditions. He said the switch position was on in descent. But whether it's on can get washed into the background.

The recovery to the stick shaker appeared normal to him. A textbook recovery.

He said if he was flying he would have gone around. They still met the stabilized approach criteria though.

No reconfiguration changes – gear or flaps – after the shaker.

Vertical guidance -- they were using the ILS. He said the autopilot was not engaged. He does not recall if the FD captured.

The CRM was described as good before the incident. The captain was directing the FO, and the first officer was doing his duties. He characterized it as OK after the event. As soon as she recovered she asked for speeds. Does not recall if she said anything after the expletive following the shaker and before her call for speeds. The FO gave her the ice speeds.

He said they flew the remainder of the approach at 150-155.

Interview:	**Jessica Shah, Captain**
Date/time:	**12 March 2009, 1600 edt**
Location:	**NTSB Conference Center, Washington DC**
Present:	**Cox, Byrne, NTSB; Crook, Dittmar, Colgan; Wickboldt, ALPA; Conway, FAA; Simpkins, Bombardier; Webster, TSB-C**
Represented by:	**Jeffrey Loesel**

During the interview Captain Shah stated the following information:

Age 39. She is a captain on the Q400 at Colgan Air. Has been in the Q400 for a year. During that year she accumulated between 800-1000 hours in the airplane. She's been at Colgan for 6 years and 3 months. She has about 9000 hours total flight time.

She was asked to describe the event. They were descending. Doing checklists. And flying into and out of the clouds. They were talking to BTV approach. They were being given vectors for the visual to runway 15, and were basically on a downwind had the beacon in sight. They told approach that and they were cleared for the visual for runway 15. She turned base to final. They had level 2 icing on at the time. On base they started configuring the aircraft. On base to final the final configuration was completed and they ran the checklist. That was about it.

They got a shaker as they were descending. They lowered the nose a little more and added full power. The airplane was under control and she felt confident, she set the power where she needed it and she continued the landing. Her initial reaction was shock, that's all.

Icing equipment had been on a good amount of time – she'd turned it on in cruise. There were icing conditions up in cruise.

She was planning on turning off the deicing equipment before landing. Based on the descent the temp was 5 or 6 deg Celsius. Descending through the clouds the temp dropped to -1. There was no ice on wings, no advisory light indicating there was ice. She felt they'd not be in icing conditions on landing so that is what she briefed.

She asked FO for the no-ice speeds and enroute ice speeds. He programmed the information into ACARS and got the speeds. The no-ice speeds V ref was around 118 and the ice speed was about 20 knots greater than that. She said she set the speeds, based on what she was observing and during descent she and the FO bugged the no ice speeds.

Conditions were night VFR. ATC set them up on a right downwind. She had no problem seeing the airport. She had the runway in sight on base leg. Configured on downwind. She started slowing up so she would request flaps 5. Since it was a visual approach instead of an instrument approach profile that is when she starts configuring.

Basically they were on the base leg and she called for gear down. Base-to-final she called for flaps 15, and of course the before landing checklist. They got the shaker event on final. They were already established on final. Descending the whole time. The altitude when the shaker went off was around 1800 feet MSL. She said the power was back.

The target speed she was thinking of in the pattern was the ref speed+10 to 15 knots. That's how she has been trained. That's the speed on downwind. On final target speed is no slower than ref+10.

The low speed cue did not come into her view until stick shaker. That is when she saw it.

When the shaker went off they were around 135. She did not go around because she was in control of the aircraft, stabilized, and still descending, and well above the criteria for a stabilized visual approach.

She was surprised for just a moment when the shaker went off. Her first thought was to recover. Add power and lower the nose. When it came on she realized why. That is when she saw the low speed cue indicator, the red line, at that point she realized why – the increased ref speed switch. She asked the FO for the ice speeds because the level 2 was on. The FO gave her 140. She then flew 140.

Her attention was directed mostly towards outside the aircraft focusing on the runway and on the decent when the shaker fired. The last speed she saw was 140 or so. The low speed cue was not in her line of sight. She did not notice it. Trend vector – it was holding speed but does not recall its behavior.

The enroute ice parameter in ACARS is the ice you pick up when flying around in cruise. Icing is for takeoff in icing conditions.

Workload was normal during the approach. No time pressure. The only distraction was looking outside the aircraft. There were no additional distractions. Only thing the FO would have been saying, if anything, were operational related comments about field in sight. There were no ATC interruptions or any other AC on frequency.

She characterized the FO's monitoring during the flight as fine, no problem.

They were on the second day of a 4 day trip. She said nothing at all affected her performance on the flight.

The line check was a routine one year line check. She knew it was coming.

After the shaker when she went to full power, she did not go past the detent. She thought she went to 90 percent torque. Didn't look at the torque either. Just knows she went to full power, and then adjusted it to what she needed.

If the increased ref speed switch had not been on it would have been a normal approach. Has not experienced this before. Has not heard about this happening before on the line either.