NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594
August 24, 2009

Addendum 2 to Group Chairmen's Factual Report

OPERATIONAL FACTORS / HUMAN PERFORMANCE

DCA09MA026

A. Accident

Operator:	US Airways Group, Inc.
Location:	Hudson River, New York, New York
Date:	January 15, 2009
Time:	1527 eastern standard time[1]
Airplane:	Airbus A320-214, Registration Number: N106US, Serial #: 1044

B. Addendum to Attachment 1 of Operations / Human Performance Group Chairmen's Factual Report

- Add the following interview to attachment 1:

Interview: Chesley (Sully) B. Sullenberger III, Captain – US Airways

Date: June 15, 2009

Time: 1205 EDT

Location: Phone interview

Present: David Helson, Katherine Wilson, John O'Callaghan - National Transportation Safety Board (NTSB); Larry Rooney – US Airline Pilots Association (USAPA)

[1] All times are eastern standard time (EST) based on a 24-hour clock, unless otherwise noted. Actual time of accident is approximate.

Captain Sullenberger was represented by Captain John Carey who disconnected from the call after the first approximately 5 minutes.

In the interview, Captain Sullenberger stated the following information:

Regarding his understanding of fly-by-wire protections, he stated that in normal law there was load factor protection, attitude protection, high angle of attack (AOA) protection, high speed protection, and in addition there was low energy warning.

He said in his initial Airbus training, in July 2002, he attended about a two week classroom ground school. The airplane systems and the fly-by-wire protections were covered during the classroom training, and demonstrations of some of the protections were given in the flight simulator. He stated that in the annual Continuing Qualification Training (CQT), which was comprised of one day of classroom ground school and two days of simulator training, there was a systems review. His recollection was that all airplane systems, including the flight laws, were covered in the review.

Captain Sullenberger stated that when the AOA reached alpha prot, alpha protection began and in normal law alpha cannot exceed alpha max even with full back stick. When asked what cues were available to make the pilot aware that he was in alpha prot, he said the pilot would see the speed tape which had a yellow and black portion below VLS.

Captain Sullenberger said he believed that the low speed warning protection was covered during training. He recalled the low speed awareness was available when flaps were in config 2, 3, or full between 100 feet and 2,000 feet RA (radio altitude) when TOGA was not selected. When asked if there was any discussion in training regarding when the low speed awareness was inhibited, he said it was inhibited when outside of the parameters previously mentioned; when TOGA was selected or when not between 100 and 2,000 RA.

When asked if the training included information on what other systems (for example; the GPWS) might inhibit the low speed warning he said he knew there was a “priority of warnings” but he did not recall from training if that was the case.

Captain Sullenberger said that generally speaking, the airspeed callouts were a pilot monitoring (PM) duty. He said anytime you were approaching one of these limits, it was the PM duty to call out any deviations from standard attitude, speed, or altitude.

Captain Sullenberger said that he thought the training received at US Airways was adequate for understanding fly-by-wire protection systems.

When asked to compare a fly-by-wire with a conventional airplane stall system, he said the fly–by-wire protection systems went far beyond the warnings of a conventional airplane. In a conventional airplane, it was incumbent upon the pilot flying to recognize a stall warning or the onset of stall and to apply appropriate action in terms of increasing thrust and reducing AOA below the critical AOA to maintain a safe AOA and maintain control of the airplane. He said the Airbus protections, in normal law, prevent the airplane from being stalled, and prevent alpha max from being exceeded even with full aft deflection [of the side stick]. He said, with autothrust engaged, there are also thrust protections.

He did not recall entering alpha protection or hearing the "speed, speed, speed" warning during the accident flight. He said he did not recall the side stick feeling heavy during the descent or during flare. When asked if he knew how the auto trim reacted when in alpha protection, he said the nose up trim was inhibited during alpha protection.

Regarding the FOM TM (Flight Operations Manual Training Manual), he said pilots were required to review it in addition to the Pilot Handbook (PH) and he thought it was covered in recurrent training annually. When asked about the usefulness of the FOM TM, he said he thought it was useful but would probably be more useful if it was a little more in depth. He said he thought the philosophy at this company was that pilots need to be able to operate the airplane but not to build it. There is a balance that must be struck; there are some things that cannot be seen on an indicator, there are some things we can not affect but there are also some things that through a thorough understanding of systems knowledge would be useful.

Captain Sullenberger said he did not recall having seeing any guidance on ditching without thrust. He said it has been 5 months since the accident and he had not been in the cockpit nor had he been through the annual recurrent training since then.

Captain Sullenberger said he had reviewed the Engine Dual Failure procedure since the accident. When asked about the QRH (Quick Reference Handbook) guidance for ditching with 11 degrees nose up pitch and minimum vertical speed, he said it was “barely adequate” and that if he was faced with the situation again he would like to have more guidance than the checklist provided. Specifically, he said he would like to have guidance about the kind of flight path that was required to achieve those parameters. He said it was one thing to state parameters that were expected in terms of certification, it was quite another to be able to do that quickly. He said he thought more guidance would be needed about the steps that need to be taken to achieve the parameters.

When asked if there was any additional guidance that he thought would be useful to a pilot faced with this situation, Captain Sullenberger stated that he thought there should be “exit routes” from high altitude scenario checklists. When it was not possible to complete a checklist, due to time or other limitations, there should be exit routes to lead a crew more quickly to the necessary checklist or for example; in the Eng Dual Failure checklist to shortcut the procedure to get to the forced water landing checklist. He said that would have been helpful to be able to configure the airplane and achieve the parameters by having specific guidance about the flight path required to achieve those parameters.

When asked if he was familiar with the guidance in the Aeronautical Information Manual (AIM) regarding ditching with no power available he said the AIM was not something that airline pilots normally had access to. He said at major airlines, they do not spend much time on general source documents; most of the time was spent using company specific manuals or procedures that were FAA approved and were more specific to the company operation. The company manuals generally complied with the FAR’s and the recommendations of the AIM.

He said there may have been a change since the accident but at the time of the accident, pilots on the domestic Airbus fleet were required to carry with them two Jeppesen route manuals (volume 1 and volume 2), the FOM, and the PH (Pilot Handbook). He said typically, a pilot would review the additional manuals once a year just prior to the annual CQT event; the company put out a list of review questions and a pilot would look through the manuals to find the answers. He said the list of questions was generated by the training department and he thought based on what they considered to be the most important subject areas. Most of the time and effort was spent on finding answers to the specific review questions but a pilot was still responsible for the content of the manuals. He said it was a matter of priority and time.

Captain Sullenberger was asked to relate his observations of what has been learned since the accident. Captain Sullenberger said he followed some of the public hearing and believed that the use of ECAM procedures, ECAM exceptions, and ECAM follow up items on the Airbus was not an optimum situation. He would like to see regulatory agencies, operators, and manufacturers agree on ways to either eliminate or greatly reduce the use of ECAM exceptions.

Regarding the US Airways QRH, he said he thought the old version of the QRH, with tabs to identify pages, was a lot easier to use.

Captain Sullenberger stated that there appeared to be a disconnect between certification of airplanes and the operation of airplanes. He said there were things the regulators and/or manufacturers knew that operators were not fully trained on.

Regarding bird strike mitigation efforts, he said the warnings pilots receive were very general and of limited usefulness because there were not many things a pilot could do based on those warnings.

He said it appeared that following a water landing it may be necessary to consider some of the exits and slide rafts possibly unusable and the ability of the remaining rafts to accommodate all occupants needed to be considered. He said there were many airplanes flying around that have neither slide rafts nor life vest and people had to rely on seat cushions for flotation. In the domestic US there were many airports where the takeoff or landing flight path was over water where a sudden forced landing would put people at risk. That was something he thought needed to be reevaluated.

Captain Sullenberger said that we would all be better served if there were fewer ECAM exceptions or possibly none.

Captain Sullenberger said the CQT guide was published by US Airways each year and the issues included were rotated to increase exposure to a larger number of events or the “hot topics”. He said there was no way to cover all of the information but over a period of years, there was a good amount of coverage. He said he thought that there was a lot of pressure on companies to not pull pilots off line for too much time. This limited the amount of time available to cover a lot of information.

He stated that the manuals a pilot was not required to carry were typically left at home for study and review and they were referenced in the manuals that were carried.

He said he did not recall ever having been taught ditching techniques in the simulator.

Interview ended at 1236.