

SUBMISSION of the
Allied Pilots Association
to the
National Transportation Safety Board
Regarding
US Airways Flight 1702
Philadelphia, PA
March 13, 2014

In accordance with 49 CFR 831.14, the Allied Pilots Association (APA), a designated Party to the National Transportation Safety Board (NTSB) investigation of the accident, respectfully submits to the Board its analysis and recommendations.

Communication with respect to this submission may be addressed to:

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NOTE REGARDING US AIRWAYS/AMERICAN AIRLINES MERGER

On December 9, 2013, American Airlines and US Airways merged airlines. At the time of the accident, the US Airline Pilots Association (USAPA) represented the pilots of US Airways and was given party status to the US Airways (AWE) flight 1702 investigation. On September 16, 2014, the National Mediation Board ruled that the Allied Pilots Association (APA) was the legal bargaining agent for both US Airways and American Airlines pilots. On October 2, 2014 the NTSB Investigator In Charge (IIC) for AWE 1702 granted party status to APA.

SUBMISSION OUTLINE

Statement of Intent

Executive Summary

Findings

Contributing Factors

Recommendations

Dissemination of Information

Flight Warning Computer Enhancements

High Speed Reject

Procedures

Investigation Process

Conclusions

STATEMENT OF INTENT

The Allied Pilots Association (APA) appreciates the opportunity to participate in the investigation of AWE 1702. The factual circumstances surrounding the accident have been thoroughly discussed and are now a matter of public record. APA's intent in this submission is to highlight areas where known deficiencies exist and suggest specific improvements to enhance aviation safety.

EXECUTIVE SUMMARY

On March 13, 2014 at approximately 1830 local time, US Airways flight 1702, an Airbus A320, N113UW, experienced a nose gear collapse and tail strike shortly after rejecting its takeoff on runway 27L at the Philadelphia International Airport (KPHL). The aircraft came to rest on the north edge of the runway. All 149 passengers and 5 crew members successfully exited the aircraft via the escape slides. There were no injuries to passengers or crew. The aircraft was substantially damaged. The flight was a regularly scheduled passenger flight operating under 14 Code of Federal Regulations Part 121 between Philadelphia and Fort Lauderdale/Hollywood International Airport (KFLA). Day visual meteorological conditions prevailed.

FINDINGS

Using appropriate company procedures that allowed the Pilot Monitoring (PM) to load the ATC route in to the Flight Management System (FMS), the first officer loaded the non-departing runway (27R) into the FMS while at the gate during the time the captain was consulting with US Airways Dispatch regarding a takeoff delay caused by an Expect Departure Clearance Time (EDCT).

Using appropriate company policy, the captain elected to single engine taxi to the runway, the recommended method of taxi at US Airways.

During taxi out, the flight's final weight and balance message was sent to the aircraft via ARINC Communication and Reporting System (ACARS). The first officer loaded that information into the FMS.

While holding short of the takeoff runway, the crew was informed by Air Traffic Control (ATC) that they were number six in sequence for departure. Shortly thereafter, ATC unexpectedly advised the crew that they were now next in line for departure.

The captain called for the start of the second engine and the crew accomplished the taxi checklist. Checklist execution was interrupted by a flight attendant calling the cockpit to advise that a passenger was in the lavatory. The flight attendant subsequently called back and advised that the passenger had returned to their seat. The checklist was resumed and completed.

While taxiing onto runway 27L, the crew accomplished the “below the line” portion of the taxi checklist. At that point, the captain recognized that runway 27R was loaded in the FMS and requested that the first officer correct the input.

The crew commenced a normal takeoff roll with the captain setting the thrust levers in the Flex (FLX) detent. At approximately 60 knots, the crew received an Electronic Centralized Aircraft Monitoring (ECAM) message indicating that the engine thrust levers were not set. The captain verified and confirmed to the first officer that the thrust levers were in fact in the FLX detent. The aircraft continued to accelerate.

At approximately 90 knots, a “RETARD” auto-callout sounded in the cockpit and continued approximately every two seconds throughout the accident sequence. The captain elected to continue the takeoff and investigate the issue once airborne.

Upon rotation, the captain "felt the airplane was totally unsafe to fly" and, using his emergency authority under FAR 91.3, elected to discontinue the takeoff. The aircraft incurred a tail strike and a collapsed nose gear. After the aircraft came to rest, the captain commanded an evacuation of the aircraft, which was orderly and successful.

CONTRIBUTING FACTORS

1. The unanticipated and misleading “RETARD” auto-callout that, to the crew’s knowledge, was normally generated during the landing phase. This created confusion among the flight crew during a critical phase of flight.
2. The failure of Airbus to provide adequate information and subsequent guidance to operators and flight crews that addresses the possibility of, and effects due to, phase shifting of the Flight Warning Computer (FWC).
3. FMS design that did not trap or alert the crew to their failure to program the proper takeoff thrust setting and V speeds.

RECOMMENDATIONS

APA recommends the following issues be addressed in order to advance aviation safety:

Dissemination of Information

The investigation revealed that there was a lack of awareness regarding the existence of a “RETARD” auto-callout on a takeoff roll amongst US Airways line pilots, A320 Check Airmen, A320 Flight Training staff, and members of the Flight Operations Safety Board (FOSB). Pilots interviewed stated that they had not heard of a “RETARD” auto-callout on takeoff prior to the events of AWE 1702. Further, Airbus had not disseminated any information directly to US Airways regarding the possibility of a “RETARD” auto-callout on takeoff prior to the accident. During interviews, the US Airways Managing Director of Flight Technical Operations stated that if he had received information regarding a “RETARD” auto-

callout on takeoff, he would have taken the issue to FOSB, which would have resulted in a safety review and possible modification to US Airways operating procedures. The only reference from Airbus to the existence of this auto-callout was an article placed on their World In-Service Event (WISE) website in December of 2013. In retrospect, this proved to be inadequate to the task of making operators and flight crews aware of this potentially distracting function.

Additionally, during the investigation process, Airbus revealed that absent a set FLEX temperature, eight seconds after the initial FLX/MCT thrust setting, the aircraft's Full Authority Digital Engine Control (FADEC) automatically set TOGA thrust. This function was also unknown to the crew and US Airways fleet team.

To Airbus — Develop a process for timely dissemination of all flight critical information to ensure operators and flight crews have a complete understanding and awareness of any warnings or alerts that may be encountered.

Flight Warning Computer Enhancements

The accident crew received an unexpected and misleading “RETARD” auto-callout during the high speed takeoff regime. This is counterintuitive to a pilot who is accustomed to hearing the “RETARD” auto callout during the flare in the landing phase of every flight.

To Airbus — Enhance the A320 Flight Warning Computer (FWC) to either inhibit the “RETARD” auto-callout in the high speed regime or reprogram to a “TOGA” auto-callout, since that was what Airbus’s procedure required.

High Speed Reject

At the time of the accident, a “RETARD” auto-callout was not one of the criteria at US Airways for a rejected takeoff in the high speed regime.

To American Airlines — Item closed. US Airways published Bulletin 21-14 on September 5, 2014 that amended the previous high speed reject criteria to include the “RETARD” auto-callout. This guidance has been adopted into the current American Airlines Operating Manual (OM) to cover the entire combined A320 fleet of the new American Airlines.

Procedures

At the time of the accident, US Airways did not require runway verification during the Route Verification process that the pilots completed prior to departure. Subsequent changes in company procedures now require a higher level of runway awareness and the planned takeoff runway must be briefed as the first step in the Route Verification process and subsequently confirmed by both pilots.

To American Airlines — Item closed. Operating Manual Volume 1 be changed to provide guidance that crews should be required to re-accomplish the complete Taxi Checklist if given a runway change, with emphasis on possible V-Speed, flap, and thrust

changes. Alternatively, enhance the A320 Taxi checklist to include “Runway” on the Takeoff Data line to further enhance departure runway awareness.

To Airbus — In order to enhance runway verification during the “below the line” portion of the Taxi checklist, move the runway number symbology on the Nav Display so that it is not buried at the bottom of the display near the aircraft symbol and flight plan routing. In addition, labeling the runway programmed in the FMS adjacent to the speed tape on the Primary Flight Display (PFD) would greatly mitigate the risk of taking off with incorrect speeds set. Additionally, a level one alert, accompanied by an ECAM message, should be generated to inform the crew when no V speeds have been set.

Investigation Process

On April 18, 2014, Airbus made a presentation and conducted associated simulator work on Flight Phase Alerts during takeoff in an A320 engineering simulator in Toulouse France. Present were the NTSB Operations and Human Performance Group chairmen, and a representative from the Bureau d' Enquetes et Ad'Analyses (BEA). A 30-page presentation was delivered. FAA, APA, and American Airlines accident group members were not present.

To Airbus — During the accident investigation process, all parties should be present during any presentations and afforded the opportunity for input, questions, and analysis.

CONCLUSIONS

Airbus aircraft are highly automated and technical aircraft that incorporate design philosophies intended to protect the flight crew from risk. An unintended consequence of these design philosophies is that flight crews have found themselves dealing with an aircraft that is behaving in a manner in which the flight crew has not been trained or fully briefed. Unfortunately, AWE 1702 is not the first accident where a flight crew has encountered anomalous behavior from their A320 series aircraft. It is imperative that automation adds to the flight crew's safe operation of the aircraft. This is impossible to accomplish when the flight crew is not aware of how the aircraft will behave in a particular flight regime. It is time for a paradigm shift to revisit how the autothrust system, flight warning computer, and flight control laws are designed in order to make the aircraft more intuitive to a pilot while preserving appropriate protections.