SUBMISSION OF THE

NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

TO THE

NATIONAL TRANSPORTATION SAFETY BOARD

REGARDING THE ACCIDENT INVOLVING

CONTINENTAL AIRLINES FLIGHT 1404

AT

DENVER, COLORADO

ON

DECEMBER 20, 2008

Submitted by: William Shea, Chair,
NATCA ASI Committee

Dated: March 5, 2010

I. INTRODUCTION

As a party to the NTSB'S investigation of the accident involving Continental Airlines Flight 1410 (COA1404), the National Air Traffic Controller's Association submits the following factual findings for the NTSB's consideration. This submission highlights key facts from the controller's perspective concerning the accident, including the FAA's policy and procedure for issuing wind shear alerts and for determining the runway configuration when crosswinds and wind shear alerts are present. NATCA respectfully requests that the NTSB consider these important facts in reaching its final decision as to the probable cause of the accident.

II. ACCIDENT

On December 20, 2008 at 1818 Mountain Standard Time (MST), Continental flight 1404, a Boeing 737-500 (registration N18611), equipped with CFM56-3B1 engines, crashed during take off from runway 34R from Denver International Airport (DEN), Denver, Colorado. The scheduled, domestic passenger flight, operated under CFR Part 121, was enroute to George Bush Intercontinental Airport (IAH), Houston, Texas. One of the five crewmembers was seriously injured. There were 37 injuries among the passengers and crew and no fatalities. The airplane was substantially damaged and experienced a post crash fire. The weather observation in effect closest to the time of the accident was reported to be winds at 290 and 24 knots with gusts to 32 knots, visibility of 10 miles, a few clouds at 4000

feet and scattered clouds at 10,000 feet. The temperature was -4 degrees Celsius.

III. AIR TRAFFIC CONTROL

A. ATIS INFORMATION "CHARLIE" PROVIDED A WIND SHEAR ADVISORY

According to FAA Order 7110.65, when wind shear advisories are in effect, controllers are required to issue the wind shear alert to all aircraft. Paragraph 3-1-8, LOW LEVEL WIND SHEAR/ MICROBURST ADVISORIES, states:

> **a.** When low level wind shear/microburst is reported by pilots, Integrated Terminal Weather System (ITWS), or detected on wind shear detection systems such as LLWAS NE++, LLWAS-RS, WSP, or TDWR, controllers shall issue the alert to all arriving and departing aircraft. Continue the alert to aircraft until it is broadcast on the ATIS and pilots indicate they have received the appropriate ATIS code. A statement shall be included on the ATIS for 20 minutes following the last report or indication of the wind shear/microburst.

At the time of the incident, Denver International Airport departure information, ATIS code "Charlie" stated:

> 0053Z, wind 270011, visibility 10, few clouds at 4,000, 10,000 scattered, temperature -6, dew point -16, altimeter 2997. Low level wind shear advisories in effect, pilot weather report 25 west of Denver at 0000Z B737 reported moderate turbulence between 9,000 and 17,000, departing runway 25, runway 34R, runway 34L. Notices to

airmen runway 35R stop bar at taxiway EA, P2, P3 and P4 out of service; Blue Mesa VOR DME out of service; bird activity vicinity of airport. All aircraft read back all assigned altitudes. Advise on initial contact you have information Charlie. (Emphasis added.)

Thus, on the evening of the accident at DEN, there were reports of wind shear in the area of the airport and the tower correctly included the appropriate wind shear advisories in the current departure ATIS information "Charlie."

B. COA1404 RECEIVED ATIS INFORMATION "CHARLIE"

At 0110:39 UTC, COA1404 checked in with Denver Ground Control and said the following, "Denver Ground, good evening, COA1404 at three whiskey, we have Charlie." Wind shear advisories were in effect on the current ATIS (Charlie).

During the hours that preceded the accident, there were no aircraft that refused their runway assignments and there were no go-arounds from arriving aircraft due to wind conditions.

According to FAA Order 7110.65, Air Traffic Control, Chapter 3, Terminal, Section 5, Runway Selection, paragraph 3-5-1, "if a pilot prefers to use a runway different from that specified, the pilot is expected to advise ATC." Prior to the accident, the controller reported the wind conditions and issued the departure clearance for the assigned runway. The pilot did not request a different runway.

C. DENVER INTERNATIONAL AIRPORT WIND SHEAR DETECTION EQUIPMENT

Denver International Airport has an advanced wind shear alert system that is designed to be runway specific because of the size of the airport.

1) ITWS INTEGRATED TERMINAL WEATHER SERVICE

Integrated Terminal Weather Service(ITWS) provides automated weather information for use by air traffic controllers and supervisors in airport terminal airspace. It provides products that require no meteorological interpretation to air traffic controllers, air traffic management systems, pilots, and airlines. ITWS provides a comprehensive current weather situation and highly accurate forecasts of expected weather conditions for 30 minutes in the future.

An important feature of to the ITWS system is that it provides pertinent information that does not require interpretation.

2) LLWAS NE ++ COMPONENT OF ITWS

Low Level Wind shear Alert System Network Expanded or LLWAS NE ++, was designed to be runway specific, a much more complex and refined system compared to earlier generation Wind Shear and Microburst detection systems. This is necessary because the Denver International Airport is approximately fifty three (53) square miles and has six runways. It is more desirable to have a runway specific wind shear alert system, such as the LLWAS NE ++, so that controllers can give aircraft crews wind and wind shear information that is pertinent to the aircraft operation on a specific runway.

Denver International Airport has thirty two (32) wind sensors that cover the 53 square miles of the airport. These sensors, in all, can produce many wind shear alerts. Because of the design of the system, the controllers only provide the pilots runway specific, pertinent information.

If the controllers were expected to issue all alerts that are generated throughout the entire airport surface, fifty three (53) square miles, and thirty two (32) wind sensors, the information would become discounted by the flying community and would create frequency congestion for the controllers. This is one reason why the LLWAS NE++ system was developed.

D. SOURCE OF ATC WIND INFORMATION PROVIDED TO COA1404

When the controller issued the takeoff clearance to COA1404, he stated: "…winds 270 at 27…."

The source of these winds was the sensor closest to the departure end of runway 34R, specifically LLWAS NE++ sensor #3. This sensor is part of the thirty two (32) sensors LLWAS NE++ has and is located east of runway 34R at the departure end. The controllers utilize this source of wind data when issuing takeoff clearances for runway 34R because it is the area that the aircraft will immediately encounter as the aircraft rotates and initiates its climb. This is consistent with local practice and FAA Order 7210.3.

According to the Meteorological Factual report, wind shear sensor two (2), which is located closer to the area where COA1404 began the takeoff roll, was sensing a higher wind velocity than wind sensor three (3) located near the departure end of runway

34R. The controller correctly utilized sensor 3 when he provided the wind in conjunction with the takeoff clearance in accordance with FAA procedure.

E. Denver International Airport Configuration

The Denver International Airport utilizes the runway configuration that will result in the greatest operational advantage. The runway configuration is an Agency decision. The controller is required to use the assigned departure runway, in this case 34R, and has no authority to change the assigned runway, except if the pilot requests a runway change due to wind conditions.

The Denver Air Traffic Control Tower and the Denver TRACON management jointly decide on the airport configuration. Considerations are the airport arrival rate and the departure demand. The Agency also considers wind conditions.

During the NTSB investigation, it became apparent that there were varying understandings as to when the Agency is required to change the airport configuration due to wind. Several witnesses testified that the airport configuration or the departure runway can be changed when:

1) Crosswind component is higher than 30 knots;

2) Crosswind component is 25 to 30 knots; or

3) If a pilot requests a different runway due to wind conditions.

IV. FINDINGS

NATCA submits the following findings for the NTSB's consideration:

- The controller's departure clearance to runway 34R and wind information delivery were timely and correct.

- The winds at the Denver International Airport are frequently variable.

- Denver International Airport, like other high volume airports, routinely operates with crosswinds.

- Individual controllers have no authority to change the assigned runway due to wind and wind shear conditions, unless the pilot requests a different runway. (Agency decision)

- During this investigation, there was a varying understanding of when to change runway configuration due to winds.

- The wind velocity at LLWAS sensor two (2) was measurably greater than the wind velocity at LLWAS sensor three (3); there was no LLWAS wind shear alert generated.

IV. NATCA RECOMMENDATIONS

NATCA submits the following recommendations to address identified issues with the runway configuration and wind shear detection:

1) The Federal Aviation Administration Denver TRACON and the Denver Air Traffic Control Tower should design specific and uniform

guidance regarding airport configuration during strong winds and wind shear conditions.

2) The Federal Aviation Administration should verify the operation of the Denver LLWAS NE++ system.