NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

May 18, 2017

Group Chairman's Factual Report

AIR TRAFFIC CONTROL

DCA17FA109

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A. ACCIDENT

Location: Yeager Airport (CRW), Charleston, West Virginia
Date: May 5, 2017
Time: 0651 eastern daylight time (EDT)[1]
1051 coordinated universal time (UTC)
Airplane: Air Cargo Carriers flight 1260 (SNC1260), a Shorts SD3-30, N334AC

B. AIR TRAFFIC CONTROL GROUP

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C. SUMMARY

On May 5, 2017 at 6:51 a.m. eastern daylight time (EDT), Air Cargo Carriers flight 1260, a Shorts SD3-30, N334AC, crashed during landing on runway 5 at the Charleston Yeager International Airport (CRW), Charleston, West Virginia. The airplane was destroyed and the two pilots suffered fatal injuries. The flight was operating under the provisions of 14 *Code of Federal Regulations* Part 135 as a cargo flight from Louisville International Airport (SDF), Louisville, Kentucky. Instrument meteorological conditions prevailed at the time of the accident.

D. DETAILS OF THE INVESTIGATION

The group convened at the CRW air traffic control (ATC) facility on May 8, 2017, where they met with the acting air traffic manager (ATM). The ATM provided a brief overview of the accident, followed by a tour of the radar room and the air traffic control tower (ATCT). The group interviewed four of the five air traffic controllers on duty prior to and at the time of the accident. The ground controller on duty at the time of the accident was on leave during the on-site investigation; therefore, was not interviewed. The four controllers interviewed were all certified professional controllers (CPC's), current and qualified on all operating position in the ATC facility.

[1] All times are expressed in eastern daylight time (EDT) unless otherwise noted.

1.0 History of Flight

SNC1260 departed from the Louisville International Airport-Standiford Field (SDF) Louisville, Kentucky, at approximately 0541 on an instrument flight rules flight plan with an enroute altitude of 9000 feet above mean sea level (msl)[2]. (See attachment 1, figures 1 and 2)

The pilot of SNC1260 checked in with the CRW terminal approach controller at 0637, level at 9000 feet, and reported that she was in receipt of automatic terminal information service (ATIS)[3] information November.

ATIS information November broadcast the 0554 weather observation at CRW that the wind was from 080 degrees at 11 knots, visibility 10 statute miles, scattered clouds at 700 feet above ground level (agl), a broken ceiling at 1,300 feet agl and overcast skies at 3,100 feet agl. The temperature was 14 degrees C and the dew point was 13 degrees C. The altimeter was 29.38 inches of mercury. The localizer was in use and arriving and departing aircraft were using runway 5. The ATIS broadcast concluded with "Notice to Airmen, runway". The ATIS system at CRW was a manual system requiring the controller on duty to manually record the ATIS. In the case of the ATIS information November transmission, the recording was cut short and incomplete.

At 0630, 21 minutes before the accident and seven minutes before the pilot of SNC1260 checked in with CRW ATC, a special weather observation was issued. The new weather observation recorded the wind at 170 degrees at 4 knots, visibility 10 statute miles, few clouds at 100 feet and an overcast layer at 500 feet. The temperature was 14 degrees C, dew point 13 degrees C and the altimeter was 29.41 inches of mercury. The ATIS was not updated to broadcast this new weather observation. The flight crew of SNC1260 was not provided the new weather.

The pilot was issued the altimeter setting of 29.41 and told to expect the localizer approach to runway 5. The pilot acknowledged the altimeter and requested the VOR-A approach. The approach controller approved the request and directed the pilot to proceed direct to the VOR at 4,000 feet. At 0642 the approach controller advised the pilot that she was 12 miles from the CRW VOR, instructed her to cross the VOR at or above 3,000 feet and cleared her for the VOR-A approach to runway 5. The pilot acknowledged the clearance with a correct readback. At 0645 the approach controller directed the pilot to contact the CRW tower on frequency 125.7. The pilot acknowledged.

At 0646 the pilot of SNC1260 contacted the CRW tower and advised she was on the visual [approach] then corrected herself and stated she was on the VOR-A approach (see attachment 1, figure 3). The local controller issued the wind as 200 degrees at 5 knots and cleared her to land runway 5. Approximately 11 miles from the runway the altitude of SNC1260 triggered a low altitude alert within the ATC radar system and provided a visual and aural alarm to ATC in the tower and the radar room. The local controller issued a low altitude alert to the pilot of SNC1260, directed her to check her altitude immediately, and issued the altimeter of 29.41. The pilot responded that her altitude was showing 2,200 feet and that they were "getting down" to 1,600

[2] All altitudes are expressed in feet above mean sea level (msl) unless otherwise indicated.

[3] ATIS – Automatic Terminal Information Service − The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information

feet. The controller responded that the alarm may have been triggered by the aircraft descent rate. There were no further communications between ATC and the pilot of SNC1260. ATC reported that no emergency locator transmitter (ELT) was heard on emergency frequency 121.5 and no ELT was recorded on the ATC frequencies.

2.0 Weather Information

The area surrounding the accident site was documented using official NWS Meteorological Aerodrome Reports (METARs) and Specials (SPECIs). CRW had an Automated Surface Observing System (ASOS) and these reports were augmented by an official weather observer. For more detailed meteorological information, see the Meteorology Group Chairman's Factual Report in the public docket. The following observations were recorded around the time of the accident:

[0546 EDT] SPECI KCRW 050946Z 06010KT 10SM SCT007 BKN013 OVC031 14/13 A2940 RMK AO2 RAE46 PRESFR P0001 T01390133 $=

[0554 EDT] METAR KCRW 050954Z 08011KT 10SM SCT007 BKN013 OVC031 14/13 A2938 RMK AO2 RAE46 PRESFR SLP943 P0001 T01390133 $=

[0630 EDT] SPECI KCRW 051030Z 17004KT 10SM FEW001 OVC005 14/13 A2940 RMK AO2 VLY FG T01390133 $=

[0651 EDT] ACCIDENT TIME

[0654 EDT] METAR KCRW 051054Z 23003KT 10SM FEW001 OVC005 14/13 A2941 RMK AO2 SLP952 VLY FG T01440133=

KCRW weather at 0546 EDT, wind from 060° at 10 knots, 10 miles visibility, scattered clouds at 700 feet agl, broken ceiling at 1,300 feet agl, overcast skies at 3,100 feet agl, temperature of 14° C, dew point temperature of 13° C, and an altimeter setting of 29.40 inches of mercury. Remarks, station with a precipitation discriminator, rain ended at 0546 EDT, pressure falling rapidly, one-hourly precipitation of 0.01 inches, temperature 13.9° C, dew point temperature 13.3° C, maintenance is needed on the system.

KCRW weather at 0554 EDT, wind from 080° at 11 knots, 10 miles visibility, scattered clouds at 700 feet agl, broken ceiling at 1,300 feet agl, overcast skies at 3,100 feet agl, temperature of 14° C, dew point temperature of 13° C, and an altimeter setting of 29.38 inches of mercury. Remarks, station with a precipitation discriminator, rain ended at 0546 EDT, pressure falling rapidly, sea level pressure 994.3 hPa, one-hourly precipitation of 0.01 inches, temperature 13.9° C, dew point temperature 13.3° C, maintenance is needed on the system.

KCRW weather at 0630 EDT, wind from 170° at 4 knots, 10 miles visibility, few clouds at 100 feet agl, overcast ceiling at 500 feet agl, temperature of 14° C, dew point temperature of 13° C, and an altimeter setting of 29.40 inches of mercury. Remarks, station with a precipitation discriminator, valley fog, temperature 13.9° C, dew point temperature 13.3° C, maintenance is needed on the system.

KCRW weather at 0654 EDT, wind from 230° at 3 knots, 10 miles visibility, few clouds at 100 feet agl, overcast ceiling at 500 feet agl, temperature of 14° C, dew point temperature of 13° C, and an altimeter setting of 29.41 inches of mercury. Remarks, station with a precipitation discriminator, sea level pressure 995.2 hPa, valley fog, temperature 14.4° C, dew point temperature 13.3° C.

3.0 Air Traffic Control (ATC)

3.1 ATC Facility

The CRW ATC facility was a combined terminal radar approach control (TRACON) and ATCT. It was staffed and operated by the FAA 24 hours a day, seven days a week. Facility staffing included 21 CPCs, two front line managers (FLMs), one support specialist, one CPC in training (CPC-IT) and four developmental controller trainees. One of the two FLM's was the acting ATM while the actual ATM was away on a detail.

The TRACON radar was an air surveillance radar (ASR-8) located at 38:21:45.984N/081:35:17.848W. The radar elevation was 1,053 msl with a magnetic declination of 6 degrees west.

3.2 ATC Service and Duty Priority

According to FAA Order JO 7110.65, *Air Traffic Control*, paragraph 2-1-1, *ATC Service*, the primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system and, in part, to provide a safe orderly and expeditious flow of air traffic.

According to FAA Order JO 7110.65, *Air Traffic Control*, paragraph 2-1-2, *Duty Priority*, updated on April 24, 2017 adding sub-paragraph c to this paragraph, air traffic controllers are to:

> **a**. *Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.*
>
> ***NOTE−***
> *Because there are many variables involved, it is virtually impossible to develop a standard list of duty priorities that would apply uniformly to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers must exercise their best judgment based on the facts and circumstances known to them. That action which is most critical from a safety standpoint is performed first.*
>
> ***b.*** *Provide support to national security and homeland defense activities to include, but not be limited to, reporting of suspicious and/or unusual aircraft/pilot activities.*
>
> ***c.*** *Provide and/or solicit weather information in accordance with procedures and requirements outlined in this order.*
>
> ***NOTE−***

Controllers are responsible to become familiar with and stay aware of current weather information needed to perform ATC duties.

d. *Provide additional services to the extent possible, contingent only upon higher priority duties and other factors including limitations of radar, volume of traffic, frequency congestion, and workload.*

3.3 ATC Staffing

Typical staffing at the CRW ATC facility included five controllers during the day and evening shifts and two controllers on the midnight shift from 2300 to 0645. During the midnight shift one controller was responsible for all radar and tower positions combined to the ATCT while the second controller was on recuperative break. The controllers would rotate staffing the ATCT during this shift.

On the morning of the accident, the controller in the ATCT signed on position at 0230 and remained on position until he was relieved at 0644. The second controller on the midnight shift was on a recuperative break from 0230 until he opened the TRACON at 0515 and transferred the TRACON function from the ATCT to the TRACON. The radar controller was relieved at 0635.

Recuperative breaks are addressed in FAA Order JO 7210.3, *Facility Operation and Administration*, paragraph 2-6-6, *Relief Periods*, which states:

a*. Personnel performing watch supervision duties are responsible for ensuring that breaks are administered in an equitable manner and applied so as to promote the efficiency of the agency. They are also responsible for ensuring that breaks are of a reasonable duration.*

NOTE−*Breaks to recuperate are provided to enable employees to engage in activities necessary to rejuvenate themselves in order to effectively manage fatigue.*

b. *Personnel performing watch supervision duties are responsible for knowing the whereabouts of employees to ensure their availability for position assignments.*

c. *Personnel performing watch supervision duties must not condone or permit individuals to sleep during any period duties are assigned. Any such instance must be handled in accordance with applicable Agency policy and the applicable collective bargaining agreement.*

3.4 Automatic Terminal Information Service (ATIS)

FAA Order JO 7110.65, *Air Traffic Control*, chapter 2, section 9, Automatic Terminal Information Service Procedures, states in part, that ATC is tasked with maintaining an ATIS message that reflects the most current arrival and departure information and that upon receipt of any new weather, regardless of whether or not there is or is not a change in values, a new ATIS recording must be made.

FAA Order JO 7210.3, *Facility Operation and Administration*, paragraph 10-4-1, Automatic Terminal Information Service (ATIS), states in part, that before transmitting, the voice and/or text message must be reviewed to ensure content is complete and accurate. When appropriate, the voice/text must be cross−checked to ensure the message content is the same.

CRW ATCT Order 7230.1A, *Standard Operating Procedures*, directed that the ATIS be recorded in accordance with FAA Order JO 7110.65, *Air Traffic Control* and FAA Order JO 7210.3, *Facility Operation and Administration* and that the ATIS shall be monitored prior to broadcast and that, when practical, a second individual should monitor the ATIS prior to broadcast.

The ATIS at CRW required that a tower controller "manually" record each ATIS broadcast. This required the controller to observe the weather observation, make note of non-control airport information such as runway and approaches in use, notices to airman (NOTAMs), pilot weather reports (PIREPs), reports of hazardous weather information updates, etc., and make a recording using a hand-held microphone. The ATIS was recorded and broadcast in a standardized format, as required.

The tower controller was responsible for updating the ATIS and advising other controllers within the facility of the current ATIS. This was done via voice to other controllers that would have been in the tower during a day or evening shift and via the information display system (IDS), a display system available at each control position in the facility. The IDS at the radar position indicated that ATIS information November was current at 0637.

At 0630 a special weather observation was issued in the tower changing the current surface weather observation at the airport, specifically the ceiling from 1,300 feet agl to 500 feet agl. The lone controller in the tower did not update the ATIS as required. During an interview with the controller on duty in the tower at the time, he stated that he expected the weather to change once again in a short time and it was a judgment call not to update the ATIS. He was relieved from position at 0644 and did not brief the relieving tower controller that the ATIS was not current. Accordingly, the oncoming radar controller, based on the ATIS data displayed on the IDS, was unaware the ATIS was not current.

Review of the ATIS information November revealed that, in addition to incorrect weather information being transmitted, the ATIS transmission was cut short of required information, specifically NOTAM and Hazardous Inflight Weather Advisory Service (HIWAS) information.

3.5 Pilot Reported Weather (PIREP)[4]

FAA Order JO 7110.65, *Air Traffic Control*, paragraph 2-6-1, Familiarization, states that controllers must become familiar with pertinent weather information when coming on duty and stay aware of current and forecasted weather information needed to perform ATC duties.

FAA Order JO 7110.65, *Air Traffic Control*, paragraph 2-6-2, PIREP Solicitation and Dissemination, states in part that controllers will solicit PIREPs when requested, deemed

[4] PIREP – Pilot Weather Report – A report made by a pilot of meteorological phenomena encountered while in flight

necessary, when ceilings are at or below 5,000 feet and when surface or aloft visibility is at or less than 5 miles. When providing approach control services, ensure at least one descent/climb out PIREP to include cloud base(s), top(s), and other related phenomena is obtained each hour.

There were three departures in the hour prior to the time of the accident. Delta Air Lines flight 1062 (DAL1062), a Boeing 717 departed CRW destined for Hartsfield-Jackson Atlanta International Airport (ATL), in Atlanta, Georgia, at 0611, Express Jet flight 3999 (ASQ3999), an Embraer ERJ-135, departed CRW destined for Chicago O'Hare International Airport (ORD), Chicago, Illinois at 0616, and Piedmont Airlines flight 4825 (PDT4825), a de Havilland Dash 8-100 departed CRW destined for Ronald Reagan Washington National Airport (DCA) at 0643. The reported and recorded ceiling at CRW during these departures was less than 5000 feet the requirement was that at least one of the flights be solicited for a PIREP. The controllers interviewed expressed a thorough knowledge of the requirements to solicit PIREPs but did not do so.

3.6 Notice to Airman (NOTAM)[5]

Current airport NOTAM information was available to the controllers via the IDS located at the control positions and was disseminated via the ATIS. The NOTAMs in effect for CRW at the time of the accident, generated by Federal NOTAM Systems on: 2017-05-08 17:07:21 UTC, included:

> !FDC 7/9923 CRW IAP YEAGER, Charleston, WV. RNAV (GPS) Y RWY 23, AMDT 1A LPV MINIMUMS NA. 1704131650-1711231650EST
>
> !CRW 08/044 CRW RWY 5 THR DISPLACED 578FT. DECLARED DISTANCES: TORA 6802FT TODA 6802FT ASDA 6302FT LDA 5724FT. 1508111752-1708151600
>
> !CRW 08/077 CRW RWY 23 ENGINEERED MATERIALS ARRESTING SYSTEM OUT OF SERVICE 1508191524-1708151600
>
> !CRW 12/043 CRW RWY 05/23 SAFETY AREA NOT STD 1512221324-1708151600
>
> !CRW 07/075 CRW RWY 5 VASI OUT OF SERVICE 1507271200-1707272000
>
> !CRW 07/074 CRW RWY 5 RWY END ID LGT OUT OF SERVICE1507271200-1707272000
>
> !CRW 07/073 CRW NAV ILS RWY 5 GP OUT OF SERVICE 1507271200-1707272000

[5] NOTAM - NOTICE TO AIRMEN− A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

!CRW 05/016 CRW OBST TOWER LGT (ASR 1054162) 381625.00N0813126.00W (6.9NM SSE CRW) 1753.0FT (273.0FT AGL) OUT OF SERVICE 1705022007-1706302000

!CRW 02/046 CRW OBST TOWER LGT (ASR 1035682) 382424.00N0814237.00W (5.8NM WNW CRW) 1304.8FT (204.1FT AGL) OUT OF SERVICE 1702280245-1706061700

!CRW 02/047 CRW OBST TOWER LGT (ASR 1035689) 383635.00N0813543.00W (14.1NM NE CRW) 1319.9FT (220.1FT AGL) OUT OF SERVICE 1702280246-1706061700

!CRW 05/021 CRW OBST TOWER LGT (ASR 1264714) 381554.60N0814633.00W (11.0NM SW CRW) 1265.4FT (307.7FT AGL) OUT OF SERVICE 1705050656-1706051200

!CRW 05/020 CRW OBST TOWER LGT (ASR 1281717) 382931.60N0811918.60W (14.6NM ENE CRW) 1184.1FT (309.1FT AGL) OUT OF SERVICE 1705050359-1706041200

!CRW 05/019 CRW OBST TOWER LGT (ASR 1208851) 382459.30N0813225.90W (3.5NM NE CRW) 1215.9FT (165.0FT AGL) OUT OF SERVICE 1705031802-1706031802

!CRW 05/009 CRW OBST TOWER LGT (ASR 1256656) 382811.00N0814237.50W (7.8NM NW CRW) 1338.9FT (361.9FT AGL) OUT OF SERVICE 1705020229-1706011200

!CRW 04/054 CRW OBST TOWER LGT (ASR 1032141) 382453.00N0814827.00W (10.3NM WNW CRW) 1318.9FT (295.9FT AGL) OUT OF SERVICE 1704300752-1705300752

!CRW 05/010 CRW OBST TOWER LGT (ASR 1234650) 383011.40N0815106.70W (14.2NM WNW CRW) 872.0FT (180.1FT AGL) OUT OF SERVICE 1705020427-1705170327

!CRW 04/052 CRW OBST TOWER LGT (ASR 1285788) 382820.90N0815132.00W (13.7NM WNW CRW) 1182.7FT (308.1FT AGL) OUT OF SERVICE 1704291458-1705141458
!CRW 04/046 CRW OBST TOWER LGT (ASR 1244229) 381642.90N0814913.10W (12.3NM WSW CRW) 1336.0FT (268.0FT AGL) OUT OF SERVICE 1704270619-1705120519

!CRW 05/025 CRW AD AP CLSD EXC MIL, POLICE OR MEDEVAC HEL OPS ON TWY B BTN TWY B1 AND TWY B4 1705051552-1705071551

!FDC 7/0940 CRW IAP YEAGER, Charleston, WV. LOC RWY 5, ORIG.MISSED APPROACH: CLIMB TO 1800 THEN CLIMBING LEFT TURN TO 4000 DIRECT HNN VORTAC AND HOLD. RADAR REQUIRED FOR PROCEDURE ENTRY EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, HVQ VOR OUT OF SERVICE. 1705051355-1705121355EST

!FDC 7/0938 CRW IAP YEAGER, Charleston, WV. ILS OR LOC RWY 23, AMDT 30A MISSED APPROACH: CLIMB TO 2500 THEN CLIMBING RIGHT TURN TO 4000 DIRECT HNN VORTAC AND HOLD, HVQ VOR OUT OF SERVICE. 1705051355-1705121355EST

!CRW 05/024 CRW AD AP CLSD EXC HEL OPS ON TWY B BTN TWY B1 AND TWY B4 1705051451-1705061451

!CRW 05/022 CRW AD AP CLSD 1705051128-1705061127

!CRW 05/014 CRW OBST TOWER LGT (ASR 1223182) 382800.10N0813935.50W (6.3NM NNW CRW) 1277.6FT (285.8FT AGL) OUT OF SERVICE 1705021554-1706021200

The NOTAM information that was included on the CRW ATIS transmissions previous and after ATIS information November included runway 5 threshold displaced 578 feet, runway 5 REIL (runway end identifier lights), runway 5 VASI (visual approach slope indicator), runway 5 ILS (instrument landing system) glidepath out of service, runway 5/23 safety area non-standard. This NOTAM information was not included in the ATIS information November broadcast on the morning of the accident.

E. LIST OF ATTACHMENTS

Attachment 1 - Figures and Illustrations
Attachment 2 – Interview Summaries

Submitted by:

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