# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

November 20, 2014

## Group Chairman's Factual Report

# AIR TRAFFIC CONTROL

**ERA12LA500**

## Table Of Contents

## A. AIRCRAFT ACCIDENT

Location: Effingham, South Carolina
Date: August 11, 2012
Time: 1310 eastern daylight time (EDT)
1710 coordinated universal time (UTC) [1]
Airplane: Beech V35B, N11JK

## B. AIR TRAFFIC CONTROL GROUP

Brian Soper
Operational Factors Division (AS-30)
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594-2000

Danny Aguerre
National Air Traffic Controllers Assn.
Miami ARTCC (ZMA)
7500 N.W. 58th Street
Miami, FL 33166

Irving Washington
Eastern Service Center QCG
Lockheed Martin / NISC
1701 Columbia Ave.
College Park, GA 30337

## C. SUMMARY

On Saturday, August 11, 2012 at about 1310 eastern daylight time (EDT), a Beech V35B, N11JK, was substantially damaged during a forced landing following a loss of engine power near Effingham, South Carolina. The certificated private pilot and the passenger were not seriously injured. Instrument meteorological conditions prevailed, and instrument flight rules flight plan was filed for the flight. The flight departed Manassas Regional Airport (HEF), Manassas, Virginia at 1052, and was destined for Flagler County Airport (XFL), Palm Coast, Florida. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

## D. DETAILS OF THE INVESTIGATION

The air traffic control group (ATCG) was formed on August 23, 2012. The group consisted of the group chairman from the Operational Factors Division, and members from the Federal Aviation Administration (FAA) and the National Air Traffic Controllers Association (NATCA).

From the FAA, the ATCG requested Jacksonville Air Route Traffic Control Center (ZJX ARTCC) radar source data, voice recordings, video playbacks, facility logs, position logs, weather data, training and qualification records, controller work schedules, and various other documents pertaining to this accident. From Lockheed Martin Flight Services, the ATCG requested all documents and recorded weather briefing information pertaining to the accident flight.

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

On August 28, 2012 the ATCG met at ZJX and was provided an in brief by the air traffic manager (ATM) and several members of her staff, also present were representatives from the FAA compliance services group (CSG), and Eastern Service Area quality control group (ESA-QCG). The in brief included a detailed briefing and video playbacks of the event provided by the ZJX staff support specialist and discussion pertaining to the investigative process. The group was then provided with a tour of the radar control facilities, as well as the Center Weather Service Unit (CWSU). Additionally, the group attended the afternoon "Stand Up" briefing conducted by CWSU staff meteorologists, a briefing that is conducted twice a day at the beginning of the day and eve shifts. Lastly, the group was provided an overview of the facilities "Take Five" program; a voluntary interactive training program facilitated jointly by the FAA and NATCA personnel at ZJX. The group then spent some time reviewing supporting administrative documents before concluding the on-site activities for the day.

On August 29, 2012 the group met at ZJX and was provided a briefing from the collaborative working group (CWG) that had been formed several months prior to the incident in order to address the weather dissemination and interpretation issues within the facility. The group then conducted interviews with the CWSU meteorologist in charge (MIC), radar associate controller (RA) and front line manager (FLM). After some discussion and review of various supporting documentation, the group concluded the on-site activities for the day.

On August 30, 2012 the group met at ZJX and conducted interviews with the radar controller (RC), Radar Developmental Controller (RD), and traffic management controller (TMC). The group then conducted an out brief with the ATM, as well as various members of her staff. Also present were the members from the FAA CSG and ESA-QCG. Several unnamed representatives from the FAA also monitored the out brief via telephone. After completion of the out brief, the ATCG completed the group field notes concluding the field phase of the accident investigation at ZJX.

On September 12, 2012 the ATCG conducted a follow up interview with the accident pilot at NTSB Headquarters in Washington, D.C. Also present at this interview were Capt. David Lawrence, Senior Operations Investigator and Mr. Paul Suffern, Senior Meteorology Investigator both from the Operational Factors Division (AS-30).

## E. FACTUAL INFORMATION

### 1.0 History of Flight

At 1243:10 N11JK first attempted to contact ZJX, however due to frequency congestion at the time the radar controller did not hear the transmission.

At 1243:59 N11JK checked in with the ZJX level at 12,000 feet. The RD controller acknowledged and issued the Florence (FLO) altimeter as well as an advisory for moderate to extreme precipitation 20 miles ahead extending to the south for 100 miles, to which the accident pilot acknowledged.

At 1244:27 the RD controller issued a broadcast to all aircraft that stated AIRMET[2] "Tango" for Tennessee, Louisiana, Mississippi, Alabama, and coastal waters was available on HIWAS[3], flight watch, or flight service frequency.

At 1252:11 the accident pilot requested to descend to 10,000 feet for weather. This transmission was not acknowledged by the RD controller and at 1300:12 the pilot re-attempted contact but was interrupted by another aircraft calling and again received no response.

At 1300:32 the accident pilot called again and requested a turn to get out of the weather. The RD controller then instructed N11JK to deviate left and then proceed direct Charleston when able, to which the accident pilot acknowledged.

At 1302:49 the RD controller informed N11JK that he thought he would be in the weather for another minute or so and then would be clear to Charleston.

At 1302:56 the accident pilot reported heavy turbulence and inability to maintain altitude. The RD controller acknowledged, and informed the accident pilot that he was almost out of it and instructed him to continue flying his present heading.

At 1303:56 the accident pilot attempted to contact ZJX and the transmission was cut off by another aircraft calling. The RD controller then instructed all aircraft to stand by, and instructed N11JK to "go".

At 1304:02 the accident pilot again reported that he was losing altitude and had also lost his AHRS[4]. The RD controller then asked the accident pilot if he could level the airplane and instructed him to fly heading 090 to which the accident pilot acknowledged the heading.

At 1304:56 the RD controller asked the accident pilot to verify his altitude, and the pilot responded that he was at 4,000 feet and was underneath the weather. The RD controller then asked the pilot if he was stabilized and level at 4,000 feet. At 1305:18 the accident pilot stated he was at 3,000 feet and then his transmission was cut off.

At 1305:29 the RC controller instructed N11JK to contact Florence approach and at 1305:35 the accident pilot responded stating that he had lost the engine. The RC controller then acknowledged and instructed N11JK to make a left hand turn to heading 360 toward Florence, and the pilot acknowledged.

At 1306:03 the RC controller informed N11JK that FLO was 15 miles out at an approximate heading of 020, and the accident pilot acknowledged.

---

[2] AIRMET – Airmen's Meteorological Information - In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications.

[3] HIWAS – Hazardous Inflight Weather Advisory Service - Continuous recorded hazardous inflight weather forecasts broadcasted to airborne pilots over selected VOR outlets.

[4] AHRS – Altitude and Heading Reference System - An inertial sensor installation that outputs aircraft attitude, heading and flight dynamics information to flight deck displays, flight controls, weather radar antenna platform and other aircraft systems.

At 1306:48 the RC controller informed N11JK that FLO did have runway 1 and that it would probably by his best option, and the accident pilot acknowledged.

At1307:01 the RC controller issued the current weather at FLO to N11JK, and the accident pilot acknowledged.

At 1307:51 the RC controller asked the accident pilot if he could do a frequency change or if he would rather remain with him, and the accident pilot responded stating "…let me stay with you, I'm a little busy right now".

At 1308:08 the RC controller cleared N11JK to land any runway at FLO.

At 1308:48 the accident pilot accidentally keyed the radio and is heard asking the other passenger if she could put something in standby.

At 1308:51 the accident pilot stated that he did not think he was going to make the airport, could not see it, and was going to have to land in a field.

At 1309:05 the accident pilot stated "Jacksonville, one one juliet kilo can't make the airport" which was the last recorded transmission received from N11JK.

At 1312:05 AWI3766 relayed to ZJX that they were in contact with N11JK and the accident pilot had reported they were on the ground and they were okay, however the engine was on fire and they needed fire and rescue to respond.

## 2.0 Radar Data

Radar data for this event was obtained from the FAA at ZJX and included source data from several radar sites in the Jacksonville airspace. Specifically, the radar source data utilized for attachments 1-5 was the Florence ASR-8 located in Florence, South Carolina. Attachment 1 is an overhead view of the accident aircrafts flight track. Attachment 2 is a zoomed view of the final portion of the accident aircrafts flight track showing proximity to FLO. Attachments 3 through 5 are 3D renderings of the accident aircrafts flight track from various points of view with NEXRAD[5] weather overlaid. Attachments 5 and 6 are overhead zoomed views of the flight track through the turbulence upset.

## 3.0 Weather Information

The FLO weather for August 11, 2012 was obtained from the KFLO automated surface observing system (ASOS), which is augmented by tower weather observers certified through the National Weather Services (NWS) Limited Aviation Weather Reporting Stations (LAWRS) program. FLO was located approximately 4 miles north of the accident site. For detailed weather information, see the METEOROLOGY WEATHER STUDY REPORT in the docket.

[5] NEXRAD – Next Generation Radar - a system of Doppler radars across the US that is used to track the location and movement of storm systems.

[1253 EDT] KFLO 111553Z 22012KT 10SM SCT028 SCT100 BKN120 29/22 A2993 RMK AO2 SLP132 T02940228=

KFLO weather at 1253 EDT, wind from 220° at 6 knots, 10 miles visibility, scattered clouds at 3,400 feet above ground level (agl), scattered clouds at 11,000 feet agl, air temperature of 29° Celsius (C), dew point temperature of 23° C, and an altimeter setting of 29.91 inches of mercury. Remarks: automated station with a precipitation discriminator, sea-level pressure 1012.9 hPa, air temperature 29.4° C, dew point temperature 22.8° C.

[1310 EDT] APPROXIMATE ACCIDENT TIME

[1330 EDT] KFLO 111730Z 22008G25KT 1 3/4SM +RA BR FEW033 BKN049 22/20 A2997 RMK AO2 PK WND 26033/1714 RAB14 P0008=

KFLO weather at 1330 EDT, wind from 220° at 8 knots with gusts to 25 knots, 1 and three-quarter miles visibility, heavy rain and mist, few clouds at 3,300 feet agl, a broken ceiling at 4,900 feet agl, air temperature of 22° C, dew point temperature of 20° C, and an altimeter setting of 29.97 inches of mercury. Remarks: automated station with a precipitation discriminator, peak wind from 260° at 33 knots at 1314 EDT, rain began 1314 EDT, one-hourly precipitation of 0.08 inches.

[1333 EDT] KFLO 111733Z 25004KT 2SM TSRA FEW034 BKN049 BKN110 22/20 A2996 RMK AO2 PK WND 26033/1714 TSB33RAB14 PRESFR P0009=

KFLO weather at 1333 EDT, wind from 250° at 4 knots, 2 miles visibility, a thunderstorm and rain, few clouds at 3,400 feet agl, a broken ceiling at 4,900 feet agl, broken skies at 11,000 feet agl, air temperature of 22° C dew point temperature of 20° C, and an altimeter setting of 29.96 inches of mercury. Remarks: automated station with a precipitation discriminator, peak wind from 260° at 33 knots at 1314 EDT, rain began 1314 EDT, thunderstorm began at 1333 EDT, one-hourly precipitation of 0.09 inches.

## 4.0 Personnel Interviews

### 4.1 Radar Associate Controller (RA)

The ATCG interviewed Mr. Michael McGinty on August 29, 2012. Mr. McGinty was represented by Mr. Brooke Lewis, attorney for the FAA. In response to questions presented by the group, Mr. McGinty provided the following information.

His air traffic control experience began in May 2001 at ZJX where he reported after graduating initial training at the FAA Academy in Oklahoma City, OK.

His regular work schedule was a rotating shift schedule with regular days off (RDO) on Sunday, Monday, and Tuesday. His regular weekly work schedule was as follows:

| | |
|---|---|
| Monday | Off |
| Tuesday | Off |

| | |
|---|---|
| Wednesday | 1300 - 2300 |
| Thursday | 1100 - 2100 |
| Friday | 0800 - 1800 |
| Saturday | 0700 - 1700 |
| Sunday | Off |

He was the RA controller on duty at the time of the accident. His training and qualification record was reviewed by the group, and documentation was consistent with his responses during the interview. He stated that he had a recent operational incident (OI) involving coordination/communication with another sector and had filed an ATSAP[6] report on the event. He stated that he did not receive additional training as a result of the incident, and that no further action was taken. He recalled the weather at the time of the accident was IFR and that WARP displayed weather in the sector that extended from near FLO and continued southwest for hundreds of miles in addition to a scattered line along the coast.

His operating initials were MM and his supervisor was Ms. Cathy Larkan. He possessed a current second class medical certificate with a waiver for hypertension and a requirement to wear corrective lenses while performing ATC duties. He stated that he was taking medication and was in compliance with his waiver. He stated that he was wearing his corrective lenses at the time of the accident as required. He stated that he had no other waivers or restrictions to his medical certificate and that his last ATC physical was conducted in November 2011. He held a Bachelor's Degree in Air Traffic Control from Averett University. He held no other aeronautical ratings or certifications, held no collateral duties, and had not been on any recent details.

On the day of the accident, he couldn't recall if he was working his normally scheduled shift or not since he routinely changed his scheduled shift for a later shift on Saturdays. He said that he had reviewed the audio/video replay of the event just prior to the interview. He said that the Front Line Manager (FLM) had assigned him to RA in order to assist the radar team, and that training was being conducted on the Sector 71 Radar Controller (RC). He said he would classify the traffic load at the time of the accident as moderate, and the traffic complexity as high. He stated that a relief briefing was conducted when he assumed RA and that a checklist was utilized, however it was not recorded.

Mr. McGinty stated that at the time he assumed RA, N11JK was already on frequency and recalled that there had been a lot of deviation requests by other aircraft as a result of the weather. He observed N11JK had lost approximately 800 feet of altitude and had passed that information along to the RC controller to ensure he was also aware. He said the RC controller then instructed the RD controller to ask the pilot of N11JK what his altitude was, and the accident pilot replied that he had encountered heavy turbulence and advised he was unable to maintain altitude. Mr. McGinty then initiated a "point out" with FLO approach control and advised them that N11JK was unable to maintain altitude. According to Mr. McGinty, the FLO approach controller then, after referencing other traffic, approved the point out and stated that N11JK was radar contact. Mr. McGinty also stated that he continued to relay the status of N11JK with FLO throughout.

[6] ATSAP – Air Traffic Safety Action Program - Voluntary reporting program that allows air traffic controllers and other employees to report safety and operational concerns.

He did not recall seeing N11JK tracking towards the weather, and did not recall the accident pilot requesting to deviate around weather until he had already encountered the heavy turbulence. He felt that, often, the weather information displayed on the radar display was not accurate, or was very slow to update. When asked to elaborate, he stated that he believed there was a 15 minute delay for WARP[7] data to update. Because of the delay, he stated it was not common to suggest deviations around weather or to suggest headings without a pilots request to deviate. He stated that he did not recall the cloud tops at the time, nor did he remember the accident pilot being asked for a PIREP. As he recalled, N11JK was the only low flying aircraft in the sector around the time of the accident. He stated that he did not know what type aircraft N11JK was, but assumed it was a single engine prop based on the speed.

Due to limited frequency coverage in the area of FLO, he suggested to RC that he isolate the frequency in order to allow another aircraft to relay information with the accident aircraft. He also initiated a point out on another aircraft with Washington ARTCC (ZDC) in order to avoid further frequency congestion by reducing the number of aircraft on the same frequency.

He stated that weather related training within the facility occurred primarily through on the job training with some recurring formal CBI's (computer based instruction). He said that he had minimal interaction with CWSU and believed that PIREPs were the most reliable source of obtaining current weather conditions. When asked, he stated that having printed copies of current weather conditions or elements of rapidly changing weather would create better situational awareness during periods of poor or hazardous weather. When asked about the facility "Take Five" training sessions, he stated they were basically voluntary and he only attended when he was actually told to do so.

At the time of the accident, sectors 71 (Florence) and 74 (Charleston) were combined. He stated that the combining of sectors 71 and 74 was normal, and felt that keeping them combined was actually the best option, especially during periods of convective weather. He stated that there would be no operational advantage to splitting the sectors.

### 4.2 Front Line Manager (FLM)

The ATCG interviewed Ms. Cathy Larkan on August 29, 2012. Ms. Larkan was represented by Mr. Brooke Lewis, attorney for the FAA. In response to questions presented by the group, Ms. Larkan provided the following information.

Her air traffic control experience began at the FAA Academy in Oklahoma City, OK in October of 1988. Upon completion of initial training at the FAA Academy in January 1989, Ms. Larkan was assigned to Memphis ARTCC (ZME) where she served until July 1996 when she reported to Los Angeles ARTCC (ZLA). In January 2007 she accepted an assignment to ZJX.

[7] WARP – Weather and radar processor - A device that provides real-time, accurate, predictive, and strategic weather information presented in an integrated manner in the National Airspace System (NAS). Details surface conditions as derived from METAR and other surface observations and is displayed on air traffic control radar displays.

Her regular work schedule was a rotating shift schedule with RDO's on Monday and Tuesday. Her regular weekly work schedule was as follows:

| | |
|---|---|
| Monday | Off |
| Tuesday | Off |
| Wednesday | 1500 - 2300 |
| Thursday | 1500 - 2300 |
| Friday | 1000 - 1800 |
| Saturday | 0600 - 1400 |
| Sunday | 0600 - 1400 |

She was the FLM of North Area at the time of the incident and stated that she was current and proficient in accordance with facility standards on all positions for which she was certified. Her training and qualification record was reviewed by the group, and documentation was consistent with his responses during the interview. She stated that he had no suspensions or lengthy medical down times and had had no previous documented OI's at ZJX. She recalled there being a lot of weather in the area on the day of the accident, and that based on WARP data, it extended down past Charleston, South Carolina.

Her operating initials were LQ and her supervisor was Ms. Jessica Mekara. She possessed a current second class medical certificate with a waiver for a thyroid condition and a requirement to wear corrective lenses while performing ATC duties. She stated that she was in compliance with her waiver and was wearing her corrective lenses at the time of the accident as required. She stated that she had no other waivers or restrictions to her medical certificate and that her last ATC physical was conducted in December 2011. She held a bachelor's degree in finance from Southern College. She held a private pilots certificate but was no longer current. She said that she held collateral duties serving as the training supervisor for the North Area, as well as, the coordinator for the facility transition to ERAM[8].

On the day of the accident, she was working her regularly scheduled shift. She said she had reviewed the audio and video replays of the event just prior to being interviewed. She stated that training was not being conducted on her position at the time of the accident; however, training was being conducted on RC during that time. She said that she would classify the traffic load at the time of the accident as moderate and would classify the traffic complexity as high. She recalled at the time of the accident she had just positioned herself behind RC and was monitoring training with a wireless headset. She said that N11JK was already on frequency when she began monitoring and the accident pilot had just stated that could not maintain altitude and needed to deviate due to weather. She recalled RC approved the pilots request to deviate and issued him a vector to FLO. She stated the accident pilot then informed RC that he could not make it to FLO and would have to put the aircraft down in a field. She recalled the accident pilot stating that he had lost his AHARS, because she said nobody knew what it meant, nor did anyone attempt to clarify. When asked, she stated that she knew the type aircraft because in order to pass on the

[8] ERAM – En Route Automation Modernization - an FAA Air Traffic Control system designed to "allow faster processing of route requests and in flight route changes". The ERAM system architecture replaces the En Route Host computer system and its backup.

emergency information to the Operations Manager (OM) she had looked it up on the URET[9] display.

She explained that during the morning shifts there were no formal controller briefings, only an update on deficiencies. She stated that FLM's were required to attend the stand-up briefing, and if she received information that she felt affected her area she would brief the controllers directly and would post the plan of the day (POD) in the North Area.

When asked about how she received updates to changing weather conditions, she stated that she could go to the CWSU for weather updates, however, relied on pilot information primarily. Especially, she added, for cloud top reports because it was more timely and accurate data. She stated that most controllers at ZJX received weather related training through OJT and CBI. When asked, she stated that she felt the provided training was adequate for controller's needs. She stated that in this case, the weather information had been issued in accordance with FAA JO 7110.65, but that maybe if it was issued more than once to the little guys it could help.

### 4.3 Radar Controller (RC)

The ATCG interviewed Mr. Matthew Demasie on August 30, 2012. Mr. Demasie was represented by Mr. Brooke Lewis, attorney for the FAA. In response to questions presented by the group, Mr. Demasie provided the following information.

His ATC experience began in mid-2006 when he attended initial training at the FAA Academy in Oklahoma City, OK. Upon completion of his initial training, he reported to ZJX.

His regular work schedule was a compressed rotating shift schedule with RDO's on Monday, Tuesday, and Wednesday. His regular weekly work schedule was as follows:

| | |
|---|---|
| Monday | Off |
| Tuesday | Off |
| Wednesday | Off |
| Thursday | 1300 - 2300 |
| Friday | 1100 - 2100 |
| Saturday | 0800 - 1800 |
| Sunday | 0700 - 1700 |

He was the Sector 71 RC controller at the time of the accident. He stated that he had no suspensions or lengthy medical down times, and had no previous documented OI's at ZJX. He held no collateral duties and had not been on any recent details. He recalled the weather at the time of the accident wasn't good and that the WARP data was showing a large area of moderate and extreme precipitation across the area.

[9] URET – User Request Evaluation Tool - an en route decision support tool that is used by the sector team in performing their strategic planning responsibilities. URET uses flight plan data, forecast winds, aircraft performance characteristics, and track data to derive expected aircraft trajectories, and to predict conflicts between aircraft and between aircraft and special use or designated airspace

His operating initials were PB and his supervisor was Ms. Cathy Larkin. He possessed a current second class medical certificate with a requirement to wear corrective lenses while performing ATC duties. He stated that he was wearing his glasses at the time of the accident as required. He stated that he had no other waivers or restrictions to his medical certificate. He possessed no other aeronautical ratings or certificates and held a bachelor's degree in aviation technology from Perdue University.

On the day of the accident, he was working his normally scheduled shift and stated that he was current and proficient on all positions for which he was certified. He said that he had reviewed the audio and video playback of the event just prior to being interviewed. He said he would classify the traffic load at the time of the accident as moderate and the traffic complexity as "highly complex" due to the extra coordination being required for weather deviations. He stated that a relief briefing was conducted when he assumed RC, a checklist was utilized, and that it was recorded.

He recalled that when N11JK checked in, the RD controller advised the pilot of the precipitation being shown via WARP and also read the current AIRMET to him. The next time Mr. Demasie recalled hearing from the accident pilot was when he asked for a vector out of the weather. The RD controller instructed the accident pilot to make a left turn and, when able, proceed direct to CHS. Mr. Demasie noticed N11JK has lost altitude and asked the pilot himself if he was able to maintain his altitude. When the accident pilot advised he was unable to maintain his altitude he discontinued training on the position and took over for the RD controller. He stated that he then issued N11JK a heading to FLO and the pilot stated he would not be able to make it to the airport and would be landing in a field.

He said it was common for airliners to deviate around weather that some general aviation pilots would still fly through so he did not find it unusual that N11JK was flying opposite direction of all the deviating airliners. He said that by the time the accident pilot called for a heading to get out of the weather he was already visibly in it according to displayed WARP data. He said he had not heard the accident pilot request a descent to 10,000 feet and if he had, stated he would've approved it. He initially issued a frequency change to the accident pilot once he had reported out of the weather and felt that he was in stabilized flight and FLO had reported that he was visible on radar. He said that due to frequency limitation at low altitude in that area, he felt it would be better to put N11JK in contact with the receiving facility in order to maintain communications with him until landing.

When asked about WARP data, he stated that he thought it updated approximately every six minutes and that it was better than nothing, but that he relied on pilots to tell him about the weather. He had never asked his supervisor for updated weather information; he did not look at the boards either because they were behind him and would have required him to divert his attention from the radar display. He stated that he never interacted with the CWSU concerning weather and that it was supervisor's responsibility to talk to the CWSU and then brief controllers on any weather information that may be pertinent.

He felt the weather training could be better, and that the current CBI from the FAA was worthless. He said that the WARP data displayed on the scope does not discriminate between

thunderstorms or just precipitation. He felt the best way to get clarification on weather information would be to have the CWSU come to the sector and show them what was actually convective activity and what was not. He said he may ask a pilot for cloud tops when transitioning en route, but not when they are transitioning through higher altitudes. When it came to PIREPs[10], he stated that he only solicited them from GA (general aviation) aircraft when his workload permitted. He stated that he felt it was sufficient to issue the weather once to aircraft, but said for smaller aircraft maybe more than once would be helpful. He said that calling an aircraft by its type or call sign were acceptable, and that he had done both.

He stated the Traffic Management Unit (TMU) was "disconnected" from the controllers on the floor and were always behind. He felt the TMU did not protect their airspace, and allowed ZDC to put aircraft on arrivals despite convective weather along the route. He stated when he was the CIC (controller in charge) he would tell them to shut down routes, and that it was a regular battle between the controllers on the floor and TMU.

He stated that he had never seen the products developed/issued by the CWSU with the exception of the plan of the day (POD) that was given to the supervisors at the stand-up briefing and normally posted near the supervisors' desk. He said the CWA's (center weather service advisories) were usually forgotten in the strip printer and were often not read in time to be useful. He said there was a fine line between how much weather was useful and how much was overload, but he felt that turbulence and lightning data would always be useful. He did not use the surveillance radar weather data; he said only the older controllers used that.

### 4.4 Radar Developmental Controller (RD)

The ATCG interviewed Mr. Andrew Linton on August 30, 2012. Mr. Linton was represented by Mr. Gary Bukovskey, NATCA Facility Vice President. In response to questions presented by the group, Mr. Linton provided the following information.

His ATC experience began at the FAA Academy in Oklahoma City, OK in early 2010 where he received initial training before reporting to ZJX in May 2010.

His regular work schedule was a rotating shift schedule with RDO's on Tuesday and Wednesday. His regular weekly work schedule was as follows:

| | |
|---|---|
| Monday | 0800 - 1600 |
| Tuesday | Off |
| Wednesday | Off |
| Thursday | 1500 - 2300 |
| Friday | 1400 - 2200 |
| Saturday | 1000 - 1800 |
| Sunday | 0800 - 1400 |

[10] PIREP - Pilot Weather Report - A report made by a pilot of meteorological phenomena encountered by an aircraft in flight.

He was in training on sector 71 as a developmental and was being monitored by Andrew Linton who was the sector 71 RC. He was certified on all the radar associate positions in his operational area. He stated that he felt staffing was adequate and that combining sectors was normal. He had no documented OI's, nor history of suspensions while assigned to ZJX.

His operating initials were DK and Ms. Cathy Larkan was his supervisor. He possessed a current second class medical certificate with a requirement to wear corrective lenses while performing ATC duties. He stated that he was wearing his glasses at the time of the accident as required. He stated that he had no other waivers or restrictions to his medical certificate. He possessed no other aeronautical ratings or certificates and held a bachelor's degree in criminology from West Virginia University.

On the day of the accident, he was working his regularly scheduled shift. He said he had reviewed the audio and video replays of the event just prior to being interviewed. He said that he would classify the traffic load at the time of the accident as moderate and would classify the traffic complexity as high. At the time of the accident, he believed he had been on position for approximately 45 minutes. He stated that a relief briefing was conducted when he assumed the position, a checklist was utilized, and it was recorded.

He recalled that upon initial check in, he issued the pilot of N11JK the current weather at that time. He remembered there being heavy precipitation along the west side of the sector. He recalled N11JK getting into weather and the accident pilot requested to deviate. He thought he had issued a turn to a heading of 090, at which point the pilot stated he had severe turbulence. He then noticed that N11JK had lost several thousand feet very quickly and the pilot stated he had lost his AHRS. He stated that the RC controller then assumed responsibility of the position and training was discontinued. He recalled the RC controller asked the accident pilot if he could maintain altitude and it was shortly after that the pilot reported he had lost his engine. He said the RC controller then issued the pilot a heading to FLO, and after the aircraft had turned toward the airport, the pilot reported that he was not going to make it to the airport and would have to put it down in a field.

He stated that there had been airliners diverting around the weather for quite some time. He felt the deviations correlated accurately with the weather being displayed on WARP at the time, but said pilots do not always request to deviate so he did not ask pilots if they would like a deviation around weather. He stated that general aviation pilots would routinely fly through weather that was displayed on radar, so he did not find it odd that N11JK was continuing toward the displayed weather even though airliners were deviating around it. He said that WARP data really wasn't that great, but that it was better than nothing. He estimated WARP latency to be 5-10 minutes. When asking for updated weather, he stated that he would ask pilots rather than the FLM since he felt pilots had a better idea of current weather conditions than someone on the ground did.

He stated that he had never attended, nor observed a stand-up briefing and was not aware of the weather products that were made available by the CWSU. Additionally, he stated that he had no interaction with the CWSU personnel at any time. He did not recall receiving a weather briefing on the day of the accident from the FLM, and said he could only ever recall receiving weather briefings from controllers he would relieve, not the FLM. He said when weather was a factor,

TMU would dictate what ATC would do when it came to traffic and flow, and that they were generally not receptive to requests made by controllers on the floor.

The only weather training he could recall receiving at ZJX was the mandatory recurring weather training that was the standard CBI. He believed there would be value added to having more comprehensive briefings from the CWSU meteorologists. He did not recall any training specific to performance characteristics of various aircraft types, with the exception of wake turbulence criteria. He said he was aware that N11JK was a Bonanza because the pilot had used the aircraft type on initial check in. He also stated that he had attended the "Take Five" quick sessions approximately four or five times during the previous six month period and felt they were beneficial.

### 4.5 Traffic Management Controller (TMC)

The ATCG interviewed Ms. Kathleen Haworth on August 30, 2012. Ms. Haworth was represented by Mr. Gary Bukovskey, NATCA Facility Vice President. In response to questions presented by the group, Ms. Haworth provided the following information.

Her ATC experience began in November 1991 when she was hired at Minneapolis Saint Paul ATCT (MSP). In November of 1992 she accepted a transfer to Kansas City ARTCC (ZKC) where she remained until June of 1999 when she was transferred to ZJX.

Her regular work schedule was a rotating shift schedule with RDO's on Tuesday and Wednesday. Her regular weekly work schedule was as follows:

| | |
|---|---|
| Monday | 0500 - 1300 |
| Tuesday | Off |
| Wednesday | Off |
| Thursday | 1500 - 2300 |
| Friday | 1500 - 2300 |
| Saturday | 1000 - 1800 |
| Sunday | 0700 - 1500 |

She was working in the traffic management unit (TMU) at the time of the accident, and no training was being conducted at the time. She had been certified as a TMC since January of 1992 and stated that she was current and proficient in accordance with facility standards. She had no documented OI's, nor history of suspensions while assigned to ZJX. She had been involved in some staff work in the area on CDR's (coded departure routes) as a collateral duty.

Her operating initials were KC and Mr. Cathy Mike Clark was her supervisor. She possessed a current second class medical certificate with a requirement to wear corrective lenses while performing ATC duties. She stated that she was wearing her glasses at the time of the accident as required. Here last ATC physical was completed in February of 2012. She stated that he had no other waivers or restrictions to his medical certificate. She possessed no other aeronautical ratings or certificates and held a master's degree in professional aeronautics from Embry Riddle University.

On the day of the accident, she was working his regularly scheduled shift. She said she had not reviewed any replays of the event, as it was not really pertinent since she was working in the TMU and not a position on the control floor. Additionally, she stated that she was not even aware that the accident had taken place until much later and had no direct involvement in the particular event. She said that she would classify the traffic load and complexity as moderate at the time of the accident due to the afternoon convective activity. She could not recall the specific weather patterns from that day, with the exception of the convective activity, which she stated was normal for the area. A position relief briefing was conducted when she assumed the position of TMC, a checklist was utilized, and it was recorded.

She said that the TMU received two separate briefings from the CWSU daily; one in the morning and one in the evening. Additionally, the TMU also attended the twice daily stand-up briefings that were conducted at 8:30 am and 3:30 pm respectively. In addition to the direct CWSU and stand-up briefings, she stated that the TMU is constantly being updated with weather information by the CWSU and when needed the TMC or TMC supervisor (STMC) would request updates from the CWSU for decision making and planning purposes.

She believed that the CWSU worked directly with the FLMs on specific weather information and whenever reroutes were needed the controller would speak directly with the FLM and that information would be forwarded to the TMC/STMC. When asked how long TMU waited to begin reroutes, she stated that normally they would wait until aircraft could not fly the route any longer, or during large flows as early as possible. She said that it was easy to get in-trail restrictions from other facilities, but they will frequently ask for more than they actually need in order to ensure they get what is wanted. The relationship with Washington ARTCC (ZDC) is a little “different”, she said that basically when dealing with ZDC “if ZDC wants it, ZDC gets it”.

She did not feel that anything was out of the ordinary on the day of the accident, it was pretty normal from a TMU standpoint. She did recall the convective activity that was causing a lot of reroutes and coordination, however, stated that was normal with the convective activity that was present and normal for that time of year. She said that the weather was not a “surprise” on the day of the accident and had been discussed by the CWSU during the morning brief.

### 4.6 CWSU Meteorologist In Charge (MIC)

The ATCG interviewed Mr. Arnold Michels on August 29, 2012. Mr. Michels chose not to be represented during the interview. In response to questions presented by the group, Mr. Michels provided the following information.

His meteorology experience began in the United States Air Force (USAF) where he retired from a 20+ year active duty career as a weather specialist. After retiring from the USAF, he was hired by the National Weather Service (NWS) in January of 2009 and worked at Albuquerque CWSU (ABQ) as a meteorologist before accepting a position as MIC at ZJX in January of 2010.

His regular work schedule was a rotating shift of day and eve shifts (0600-1400 or 1330 to 2130 respectively). He was not certain what days he worked what shift the week of the accident, but worked his normally scheduled shifts with no overtime.

He was not working during the time of the accident and therefore could not speak to the specifics surrounding the accident itself. He stated that nearly all interaction between the CWSU and the air traffic controllers on the control floor was conducted via the TMU. Though he said that the relationship between CWSU and ATC personnel was good in the facility, he also stated that there was not really any direct interaction with ATC on the floor, basically just the area supervisors and TMU. He felt that process was working well. He felt there was a lot more interaction with the area supervisors because of the topography and local weather and the sheer complexity of the weather dynamics in the Jacksonville area. As an example he said, at ABQ they averaged about 38 CWA's (center weather advisories) per month, and at ZJX they average 300 per month. He added that it was common to issue CWA's outside of the NWS requirements due to the rapidly changing weather conditions.

He stated that the CWSU does have access to lightning data through AWIPS[11], but has no way to disseminate that data real time to controllers on the floor. They could produce graphical products that show it, but that would be the only way outside of verbal coordination.

He said that the extent of the CWSU's coordination with the Aviation Weather Center (AWC) in Kansas City, MO was dependent on the products being disseminated. There is a coordination call in every two hours for all CWSU's with the AWC, and it is during these calls they put together the information for the national graphic. The CWSU's submit change recommendations to this as necessary during the convective season.

He didn't feel there was an issue with the local training at the facility. He was not completely certain as to what the FAA's requirement was for ATC weather training, but said that the letter of agreement stated that if the FAA asked for additional training then the CWSU was required to provide it. Most training products come out of the NWS or FAA headquarters, and little training was done on local weather dynamics.

He was concerned that during the night time hours after the CWSU was closed, that low IFR information was not issued adequately. He stated that AIRMETs cover IFR, but not low IFR and he would like to see a product developed for that, as well as, something to cover light icing conditions with all of the new fiberglass winged aircraft.

### 4.7 Accident Pilot / N11JK

The ATC Group interviewed Mr. John Michael Kennedy on September 12, 2012. Mr. Kennedy chose not to be represented during the interview. In response to questions presented by the group, Mr. Kennedy provided the following information.

He had a single engine instrument rating. He had approximately 800 total flight hours and a Class III medical with no limitations. He owned and operated the accident aircraft, a V35B-600 Bonanza, under Part 91 regulations. In July 2010 he had a Garmin 500 (G500) and GDL 69

[11] AWIPS – Advanced Weather Interactive Processing System - An interactive computer system that integrates all meteorological and hydrological data, and all satellite and radar data, for the first time, and enables the forecaster to prepare and issue more accurate and timely forecasts and warnings.

installed in the aircraft. He did not receive any specific training from Garmin, he said they would hand you the manual and it was it was more "learn as you go." He received 40 hours of instruction in the aircraft as required by insurance; he had flown approximately 150 hours in the aircraft since July 2010.

The Garmin 500 received automatic updates from NEXRAD; the typical latency was between 1 to 200 minutes. The G500 indicated the data was three minutes old just prior to entering the thunderstorm. He said he used the Garmin information as a "situational awareness tool." On the MFD (Multi-Function Display) he could access winds aloft and METARS, which he used for flight planning. The aircraft was also equipped with active traffic, but he was not monitoring it at the time. The aircraft previously had ADS-B[12], but he was not satisfied with the information it provided. He was pleased with the Garmin and felt that the manuals were user friendly and easy to understand. He had only had a problem getting updates once before, he pulled the circuit breaker to reset the system. He had more confidence in the weather data that ATC had than what he had available in the aircraft.

Prior to the flight he did an AOPA flight plan online, checked the weather on the NOAA website, and received a weather briefing from the Raleigh Flight Service Station. He thought he had an hour to make it to his destination before weather moved in and was prepared to divert and wait out the weather if he needed to. He stated that the 48 knot headwinds were much greater than the forecasted headwinds of 25 knots. He had planned a fuel stop at XFL, but did not have an alternate because the weather at his destination did not require one. He had 74 gallons of fuel onboard, which would have given him a five hour range, for the four hour flight.

He said that in general he received good service from ATC in previous trips along the same route of flight, although that was mostly in VFR conditions. He usually requested and received flight following because of all of the warning areas along that route of flight.

On the day of the accident his initial attempt to contact ZJX went unanswered; when he called a second time ATC advised him there was light to moderate precipitation 20 miles ahead of him. He did not think that the clouds looked any different than what he had been flying through. As he got closer to the system he was apprehensive about what he saw, but he believed that ATC would continue to advise him of the weather and "wouldn't put me in weather."

The NEXRAD was displaying light precipitation 10 miles from his position. He compared the cloud coverage displayed on his G500 with what he was seeing out of his window, but not with NEXRAD. He had been in and out of clouds for 20 miles and felt that the clouds in front of him looked benign. He normally stayed 10 miles from NEXRAD weather returns, he also had lightning advisory capability via his XM weather service subscription but it was not displaying any lightning at that time.

[12] ADS-B – Automatic Dependent Surveillance –Broadcast - A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GPS-derived position and other information such as velocity over the data link, which is received by a ground-based transmitter/receiver (transceiver) for processing and display at an air traffic control facility.

Just prior to entering the clouds several SIGMETs[13] popped up, he had never seen SIGMETs pop up on the G500 before. The SIGMETs indicated that the cell was moving east towards his projected flight path. He asked ATC for a deviation for weather, but did not get a response.

When he entered the clouds there was light drizzle and smooth air. Shortly after that he experienced heavy precipitation and extreme turbulence. He advised ATC that he needed to deviate; ATC issued him a left turn but did not specify how many degrees to turn. He began the left turn, and then experienced an updraft that put the aircraft in a 4,000 feet per minute climb, the airspeed indicated 253 knots, exceeding Vne (Never Exceed Speed). He experienced a tumbling backward sensation when he reduced power in an attempt to control the airspeed. He encountered a downdraft and lost 3,000 feet, and simultaneously lost the G500 display. The attitude indicator also tumbled, but corrected itself. He reported to ATC that he had lost his AHRS, but did not know if they understood what he was stating.

He broke out of the clouds at 4,000 feet, he assessed the aircraft and attempted to maintain level flight. At 3,500 feet the propeller separated from the aircraft, he informed ATC that he had lost his engine and needed to land. ATC gave him a heading towards FLO, but he was unable to make it to the airport and executed an emergency landing in a field five miles south the airport.

He was frustrated that ATC issued a left turn without specifying how many degrees. He felt that Part 91 aircraft were sometimes neglected by ATC, and that additional weather training would be beneficial for private pilots.

## F. LIST OF ATTACHMENTS

Attachment 1: ATC Radar Plot (2D Overview)
Attachment 2: ATC Radar Plot (2D Final portion overview)
Attachment 3: ATC Radar Plot (3D Flight track / NEXRAD)
Attachment 4: ATC Radar Plot (3D Flight track / NEXRAD)
Attachment 5: ATC Radar Plot (3D Flight track / NEXRAD)
Attachment 6: ATC Radar Plot (2D Zoomed view through upset)
Attachment 7: ATC Radar Plot (2D Zoomed view through upset with times and altitudes)

Submitted by:

_____

Brian Soper
Senior Air Traffic Investigator
November 20, 2014

[13] SIGMET – Significant Meteorological Information - A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles.