NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

December 30, 2004

ATC GROUP CHAIRMAN'S FACTUAL REPORT

DCA05MA004

A. AIRCRAFT ACCIDENT

Location: Kirksville, Missouri

Date: October 19, 2004

Time: 1937 central daylight time / 0037 Coordinated Universal Time[1]

Aircraft: Corporate Express Airlines Jetstream 32, CEA5966

B. AIR TRAFFIC CONTROL GROUP

Chairman: Mr. Scott J. Dunham
National Transportation Safety Board
Washington, D.C. 20594

Mr. Scott Bondurant
National Air Traffic Controllers Association
Olathe, Kansas

Mr. Mark Olsen
Federal Aviation Administration
Washington, D.C.

C. SUMMARY

On October 19, 2004, at 1937 central daylight time (0037 Universal Coordinated Time), Corporate Express Airlines flight 5966 (CEA5966), a Jetstream 32 turboprop, crashed into trees and terrain while executing the LOC-DME 36 instrument approach procedure to the

[1]All radar and radio transmission times are expressed in Coordinated Universal Time (UTC). Controller shift schedules are local time.

Kirksville, Missouri airport (IRK). The two pilots and 11 passengers were killed, two passengers survived with serious injuries, and the aircraft was destroyed by impact forces and fire.

D. DETAILS OF THE INVESTIGATION

At the time of the accident, CEA5966 was under control of the Kansas City Air Route Traffic Control Center (ZKC), Olathe, Kansas. The air traffic control group convened at ZKC on October 20 and 21, 2004. We met with Ms. Christine Hatem, the quality assurance manager, to begin the investigation. We collected initial data on the accident sequence, reviewed training folders for the involved controllers and supervisor, observed a radar replay of the aircraft's approach into IRK, went to the operations room to examine the sector position and approach charts available to the controllers, and interviewed the two controllers and one supervisor that were involved in handling CEA5966 in the period leading up to the accident. Following the interviews, we completed data collection, thanked the facility management for their assistance, and finished our on-site work at ZKC.

1. History of Flight

CEA5966 departed Saint Louis, Missouri (STL) at 2357 UTC. After being handed off from STL approach to ZKC, the pilot contacted ZKC sector 52 at 0005 level at 10,000 feet. The sector 52 controller cleared CEA5966 to climb to its requested altitude, 12,000 feet, at 0008. At 0016, CEA5966 was handed off from sector 52 to sector 40, level at 12,000 feet. Upon initial contact with sector 40, the controller verified with the pilot that the pilot had the current IRK weather and asked which approach the pilot was requesting. The pilot asked for vectors to the LOC/DME runway 36 approach, and the controller acknowledged. At 0017, the controller cleared the pilot to descend at his discretion to maintain 8,000 feet and instructed the pilot to continue on his present heading for vectors to the approach. At 0023:37, the sector 40 controller cleared CEA5966 to descend to 3,000 feet, and the pilot acknowledged. At 0027:06, the controller told the pilot to turn ten degrees right for vectors to the LOC 36 final approach course. The pilot reported that his new heading was 310 degrees. At 0030:35, the controller transmitted, " Corpex 5966 one one miles south of Kemmy[2], turn right heading 330 maintain 3,000 until established on the localizer, cleared localizer dme runway 36 approach at Kirksville." The pilot correctly read back the clearance. At 0033:40, the controller said, "Corpex 5966 frequency change approved report the down time on this frequency or through flight service." The pilot acknowledged. There was no further contact with the aircraft.

At 0043:37 and 0051:48, the sector 40 controller made radio calls to CEA5966 without response. At 0054:40, he called the Columbia flight service station to ask for their assistance in locating CEA5966 at IRK airport, and at 0059:50, the sector 40 controller again attempted to contact CEA5966 via radio with no response. At 0120, Columbia flight service reported that

[2] Kemmy is the outer marker on the LOC/DME 36 approach.

there had possibly been an aircraft accident near IRK. At 0205, the crash was confirmed by local emergency services.

According to recorded radar data obtained from the Kirksville air route surveillance radar, which is located about 14 miles north of the accident site, the last target for CEA5966 was observed at 0036:36 UTC, descending through 1,300 feet. The aircraft was the subject of a minimum safe altitude warning (MSAW) alert between 0033:12 and 0034:00 caused by descent from 3,000 feet, the minimum IFR altitude for the general area, to 2,500 feet, the outer marker crossing altitude for the approach. The alert terminated, and the aircraft crossed the outer marker at 2,400 feet before commencing further descent.

Figure 1 is a plot of radar targets showing times and altitudes along the final approach course. Figure 2 shows the full approach chart, and figure 3 is a trail view of the aircraft's path along final.

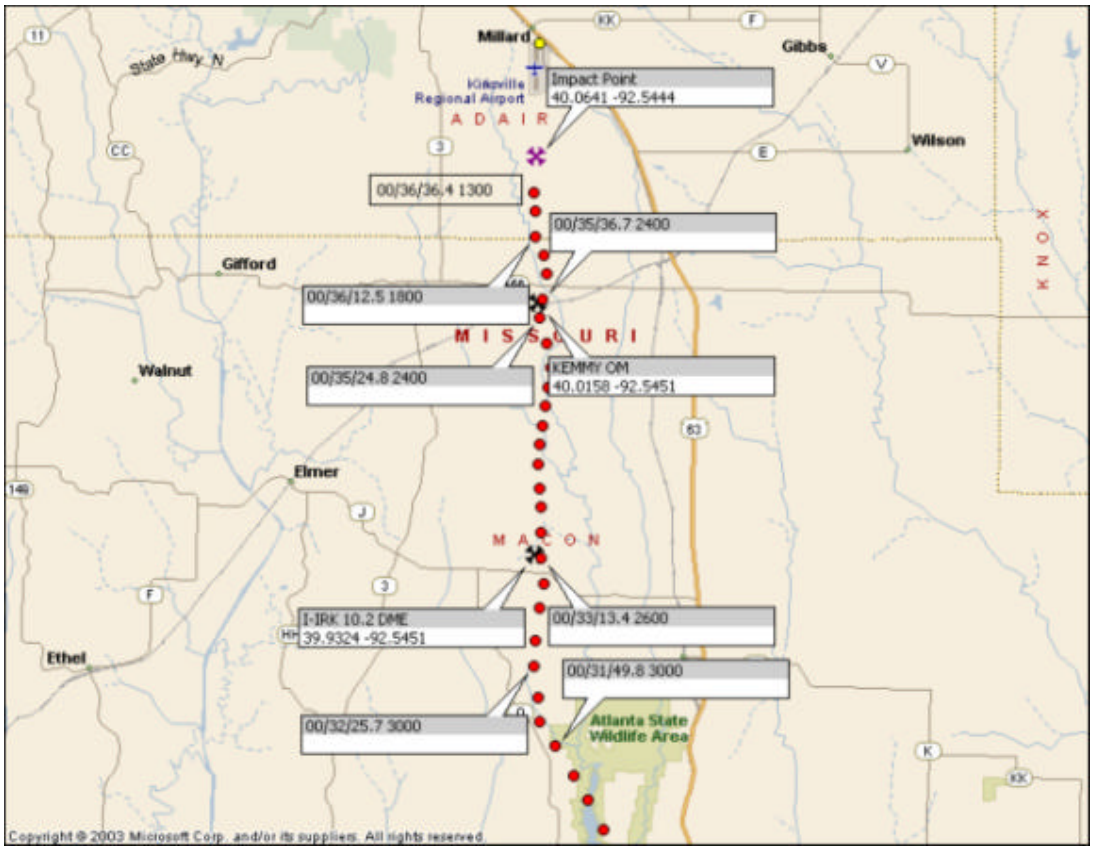

Figure 1: CEA5966 Radar Targets During LOC-DME 36 Approach

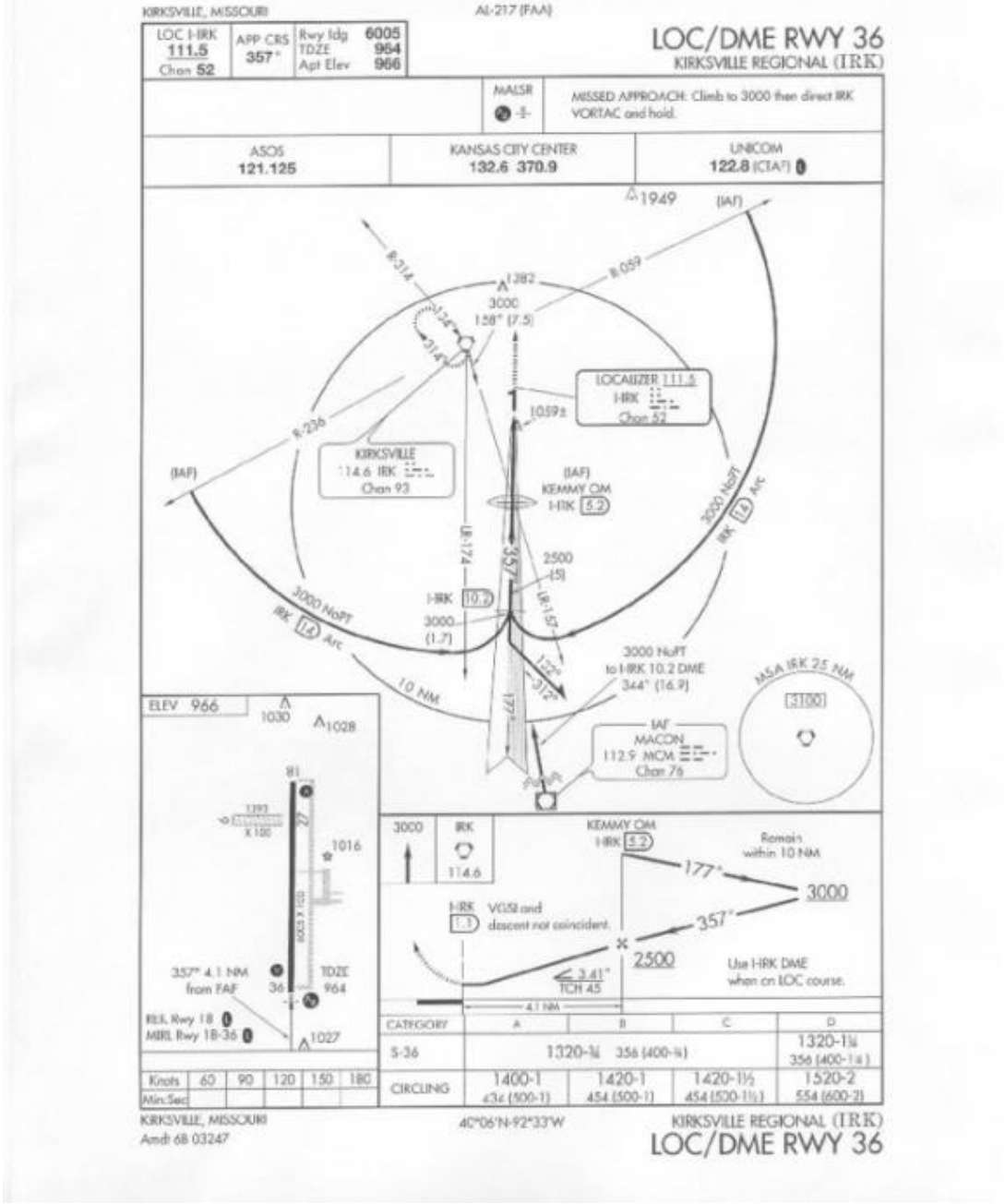

Figure 2. LOC-DME 36 Instrument Approach Chart

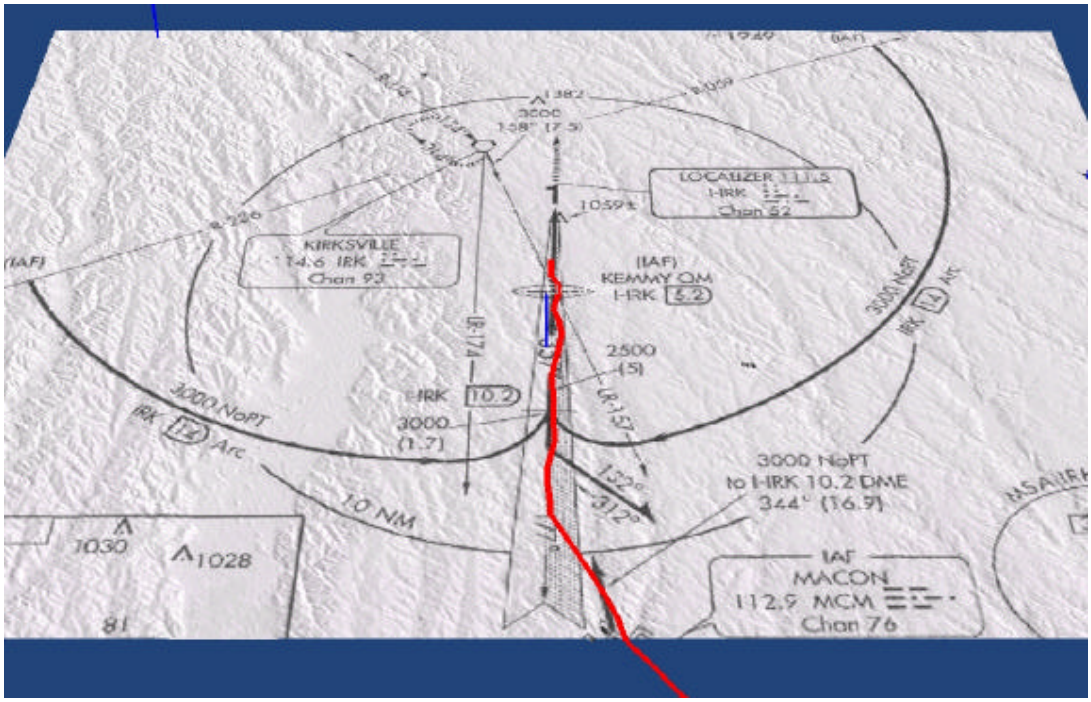

Figure 3. CEA5966 Radar Track on LOC-DME 36 Approach

2. Personnel Interviews

James H. Waltz **ZKC ARTCC R40/42 Controller**

Mr. Waltz entered on duty with the FAA on June 18, 1982. He reported to Des Moines Airport Traffic Control Tower on October 4, 1982 and obtained his Control Tower Operator license on August 4, 1983. He transferred to Kansas City Air Route Traffic Control Center (ARTCC) on March 31, 1986, and completed training on December 14, 1986. His last Technical Training Discussion (TTD) was on February 26, 2004. He is assigned to the Trails area at ZKC.

Mr. Waltz's normal work schedule consists of Saturday and Sundays off, with evening shifts on Monday and Tuesday and day shifts on Wednesday, Thursday, and a midnight shift on Friday. On the day of the accident, he began work at 1400 local time for his scheduled 1400L to 2200L shift. He stated that he was not experiencing any personal issues or unusual stresses that may have been affecting his work, and that there were no unusual staffing, equipment or weather issues affecting the area's operations.

Mr. Waltz was working sectors 40 and 42 combined when CEA5966 checked on the frequency level at 12,000 feet. Mr. Waltz queried the aircraft as to whether they had the Kirksville, MO weather and what approach would they be requesting. The aircraft responded

they had the weather and would like the LOC/DME approach to runway 36. Mr. Waltz issued a pilot's discretion descent to 8,000 feet and a 10 degree turn to the right for a vector to the localizer. Once the aircraft passed the Mizzou Approach airspace boundary he issued a further descent to 3,000 feet. At this point he checked the Kirksville weather, which was 700 overcast, visibility six miles. He then informed the aircraft of its position relative to the final approach fix (KEMMY), issued a right turn to a 330 degree heading to intercept the localizer, and cleared the aircraft for the requested approach. The aircraft joined the localizer outside the approach gate and according to Mr. Waltz made a good intercept of the final approach course. Mr. Waltz commented that he observed nothing abnormal about the flight and that everything appeared routine. Mr. Waltz was relieved from the position for a break. At that time, the aircraft was still outside the outer marker. Mr. Waltz said that after he was relieved he stayed in the area for a short period to ensure that the relieved controller was all set. He then left the area. He had been working the combined sectors for approximately 30 minutes.

Mr. Waltz stated this aircraft was the only Kirksville arrival he worked during his time on the position and there were no unusual issues with the Kirksville airport. He further explained that a "busy" period for Kirksville would be three to four arrivals in an hour. When asked about minimum safe altitude warnings (MSAW) he responded that when aircraft go below the minimum IFR altitude alerts do occur, and this is common for aircraft on the approach into Kirksville. The alerts are displayed by flashing characters in the data block and there is no audible alert. In response to a question about whether ZKC has direct access to the Automated Surface Observation System weather data from IRK, Mr. Waltz replied "no," and that he didn't know if a phone number was available to obtain the information directly from the system.

Mr. Waltz returned to the area when he received a page from a supervisor, who asked him about the aircraft. Mr. Waltz was briefed about the suspected aircraft accident, and he along with several others went to review the tapes.

When asked about radar and frequency coverage near the Kirksville airport Mr. Waltz responded that he normally observes aircraft approximately down to 1,100 to 1,200 feet and the area has radio coverage to the ground at Kirksville on frequency 132.6. When asked about receiving any approach training Mr. Waltz explained there are some computer-based instruction lessons and some simulation problems, and that generally the controllers in the Trails area have a pretty good handle on running approaches.

Thomas O. Moloney **ZKC ARTCC R40/42 Controller**

Mr. Moloney entered on duty with the FAA on September 23, 1985 at ZKC. He became fully certified on May 8, 1989. Mr. Moloney's last technical training discussion was on March 24, 2004.

Mr. Moloney's normal work schedule consists of Saturday and Sundays off, with evening shifts on Monday and Tuesday, day shifts on Wednesday and Thursday, and a midnight shift on Friday. During the previous week he had a normal two day weekend. On the day of the accident he began work at 1400 local time.

Mr. Moloney relieved the R40/42 controller and was briefed that CEA5966 had been cleared for approach. At that time CEA5966 was eight miles southeast of the outer marker on the localizer. He didn't recall the altitude of the aircraft at that time. Mr. Moloney advised CEA5966 that frequency change was approved. He kept watching the aircraft and last saw it probably one to two minutes before the crash. He saw the aircraft data block in coast status but did not observe the transition from radar tracking to coast. He said that when an aircraft at Kirksville (IRK) goes into coast it is usually about five minutes before they land and cancel their IFR flight plan.

Mr. Moloney had another aircraft waiting to land at Kirksville and needed a cancellation from CEA5966 before he could clear the next aircraft for an approach. He waited about fifteen minutes before calling Columbia flight service for assistance. Columbia advised that they had no information on the aircraft but would look into it. He may have told the Trails operations supervisor that he had called Columbia; he normally would do so when looking for an overdue aircraft. Additionally, he had another aircraft wanting to depart from Kirksville. He advised the departure that he would have to wait and asked him to look around the airport for CEA5966. The pilot of that aircraft advised that he did not see CEA5966 on the airport. Mr. Moloney also advised the airborne aircraft that there might be a delay because he was waiting for a cancellation on CEA5966.

He became aware of the accident when the operations supervisor came to the sector and reported that a witness had seen an aircraft go down about four miles south of Kirksville. Mr. Moloney was relieved from the position about twenty minutes later. The operations supervisor assembled the involved controllers and they reviewed the tape and services.

Mr. Moloney indicated he felt the situation was handled well and there was nothing unusual in the recorded data. He felt that the clearances issued were good and that he had received good replies from CEA5966. Mr. Moloney did not think there was any convective activity in the area, and stated that radar coverage in the IRK area was good at thirteen hundred feet. He also stated that the next arrival into Kirksville after the accident had flown the LOC/DME 36 approach with no problems. Mr. Moloney also stated that he did not see any MSAW alerts on the aircraft and did not know what the suppression parameters for MSAW were.

Christopher M. Followell **Trails Area Operations Supervisor**

Mr. Followell entered on duty with the FAA on April 3, 1989 and was assigned to the Wichita Airport Traffic Control Tower (ATCT) on July 18, 1989. He obtained his control tower operator license on November 21, 1989. He transferred to Honolulu ATCT on January 9,

1994, and completed training there on September 9, 1994. Mr. Followell transferred to ZKC on January 5, 1997 and became fully certified on June 11, 1998. He transferred to the ZKC traffic management unit (TMU) on November 27, 2000 and became fully certified on January 10, 2001. His last technical training discussion was satisfactorily completed on March 26, 2004. He was selected as an operational supervisor in the Trails area on September 19, 2004. He is a current private pilot.

Mr. Followell's normal work schedule consists of Saturday and Sunday off, with evening shifts on Monday and Tuesday, and day shifts on Wednesday, Thursday, and Friday. On the Sunday preceding the accident he had worked a six hour credit shift in the Traffic Management Unit.

Mr. Followell stated there were no equipment, staffing, or distraction issues in the Trails area, and the weather for the shift was low ceilings with a misty fog but no convective activity. There were no reports of any equipment outages at IRK.

He was providing normal supervision in the Trails area when the TMU called and stated that they had received a phone call from ARINC[3] inquiring as to the location of CEA5966. He went to sector R40/42 and saw a coast track data block for CEA5966. He asked the controller about the status of the aircraft. The R40/42 controller (Mr. Moloney) said that he was waiting for a down time, and that he had expected it by now but had not received it. Mr. Followell called the IRK airport fixed base operator (FBO) and inquired about the status of CEA5966. The FBO advised that the aircraft was not at the airport but he was hearing reports over his public safety radio that an aircraft had crashed and emergency services were responding to the crash. Mr. Followell stated that Mr. Moloney reported no unusual events involving the aircraft while he was handling it.

Mr. Followell contacted Ms. Nancy Housh, the operations manager (OM), and advised her of the details of the situation. He did not recall how much time passed between the ARINC phone call and the confirmation of the accident.

After the accident he reviewed the tapes with the OM and the other controllers that had worked CEA5966. They did not notice or hear anything unusual about the handling and everything seemed very routine.

Mr. Followell advised that most of the required post-accident notifications were accomplished by the OM. He was involved in obtaining controller statements and maintaining supervision in the Trails area, and also assisted in extracting the recorded flight and radar data on the aircraft.

Mr. Followell stated that he had received training on issuing approaches at Kansas City ARTCC (ZKC) during normal on the job instruction. Additional training was provided during

[3] ARINC is an airline communications service that tracks and transmits flight operational data to subscribing companies.

simulation problems and as part of the certification process. He also stated that controllers were expected to be aware of approach plate contents and that approach plates were available at the sector. He indicated that an MSAW alert on IRK arrivals was not uncommon.

Mr. Followell had been certified in the Trails area before he had become an Operations Supervisor. He had spent the previous five years in the TMU and was certified on sector R40 prior to that time. Mr. Followell also indicated that most aircraft in the Trails area were vectored for approach rather than flying full non-radar approach procedures.

Scott Dunham
ATC Group Chairman

Attachment: FAA Final Accident Package