Attachment 1

to Operations Group Factual Report

DCA05MA004

INTERVIEW SUMMARIES

Interview: Captain Jason T. Puschak
Date: October 22, 2004
Location: American Airlines, Saint Louis, Missouri
Time: 0930 CDT[1]
Group members present: David Tew, Tom Little, NTSB; Charlie Brooks, Corporate Airlines; Harvey Haynes, FAA.

During the interview, Captain Puschak stated the following information:

He was 29 years old. He was hired by Corporate Airlines on May 22, 2001.

His total flight time was about 3,200 flight hours. He had about 250 flight hours as pilot-in-command (PIC) on Part 121 airlines. He had about 250 flight hours as captain and about 1,150 flight hours as first officer on the Jetstream 3201. He upgraded to captain on the Jetstream 3201 in Feb 2004 and had no problems during the upgrade. He had no prior accidents, incidents, or FAR violations.

From 2000 to 2001, he worked for Challenge Air and flew the King Air airplane and the Navajo airplane.

He knew the accident captain "fairly well" and had dinner with him when he flew with him. He had no social contact with the accident captain outside of work.

In September, 2004, he flew as first officer (F/O) with the accident captain. They flew one flight sequence that lasted four days. He had previously flown about 50-75 flight hours and had about 50-75 landings with the accident captain. They took turns flying the flight legs.

The accident captain usually operated "by the book". Captain Puschak said he never had any disagreements with him and felt he used good cockpit resource management (CRM). He had a strong personality and was a strong leader.

The previous week, he flew the same sequence as the accident crew. At Burlington, they stayed at the Best Western Hotel, which was about 10 minutes from the airport. He was able to sleep there and get enough rest.

He was asked how he would perform the approach into the Kirksville Airport (IRK) from about 10 miles out from the airport and from about 3, 000 feet altitude. He said that as he descended to 2,500 feet, he would begin to slow the airplane to 160 KIAS airspeed. As he slowed through 170 KIAS, he would extend the flaps to 10 degrees. At about 160 KIAS, he would extend the landing gear and extend the flaps to 20 degrees. He said you wanted the gear extended and the flaps at 20 degrees and the airspeed at 160 KIAS by the final approach fix (FAF). At 5.2 miles [FAF] on the IRK localizer, he would begin a descent to 1,320 feet altitude which was the minimum descent altitude (MDA).

[1] All times are Central Daylight Time (CDT) unless otherwise stated.

Before beginning an approach to the IRK airport, he would perform a runway briefing during which he would state:

(1) the approach was a localizer DME approach to runway 36
(2) the date and page of the approach plate
(3) the localizer frequency and course
(4) the minimum altitude to cross Kemmy, which was the FAF, was 2,500 feet
(5) passing Kemmy, he could descend to 1,320 feet
(6) the airport elevation was 966 feet and the touchdown zone elevation was 964 feet
(7) the minimum safe altitude (MSA) was 3,100 from the IRK VOR
(8) the missed approach procedure was to climb to an altitude of 3,000 feet and go direct to IRK VOR and hold

The non-flying-pilot (NFP) would restate the missed approach process if they had to perform a missed approach. Note A on the IRK approach plate said to use the IRK DME while on the localizer course. He did not use the vertical guidance situation indicator (VGSI) and descent angle chart because it was not coincident. When he performed a normal descent, the VASI might show red over red because the descent would be greater than a 3.4 degree descent. The VASI would show red over red until the MDA altitude joined the VASI path. Pilot controlled lighting was used at the IRK airport. The straight-in minimum descent altitude was 1,320 feet which was 356 feet above the ground. You needed ¾ of a mile or greater visibility to begin the approach. He would also brief the approach speeds; the highest possible approach speed was 130 KIAS. He would then ask the NFP if there were any questions or comments.

He would perform the approach checklist before the approach. The NFP would read the checklist and it was a challenge and respond checklist.

The pilot controlled lighting at the IRK airport needed 7 clicks on the microphone to get the maximum lighting. Five clicks would give medium lighting and 3 clicks would only give you low lighting. He would initially go to the seven clicks and maximum lighting. Any change to the lighting then would depend on the airport or weather conditions.

He had previously flown into the IRK airport with a 300 – 400 foot cloud ceiling. On Monday, October 18, 2004, he had a 400 foot ceiling when he flew into the IRK airport. He "broke out" at 400 feet above the ground. The radio altimeter had been set to a minimum of 360 feet. The orange light on the upper part of the attitude indicator would come on when the airplane was 100 above the MDA. There would also be a long bell chime. He saw the approach lights when he broke out, but could not see the runway lights. When he broke out of the cloud cover, he was about 1 to 1 ½ miles from the end of the runway. He did not see any other lights in the area around the airport. He only saw lights that were associated with the airport. When he saw the runway, he continued his descent to 1,064 feet which was 100 feet above the TDZE. As he started down, he saw the runway lights about 1 to 1 ½ miles ahead. The airport lights were distinct and he could tell where the airport was. He said he was "on course" when he broke out. When he broke out, he could not see the ground and it was dark. At about 100 to 200 feet above the TDZE, the F/O called "runway in sight" and he was still descending. He looked up and saw the runway lights and the runway. He did not recall what his descent rate was at that time. He did not see the VASI lights until he was "fairly close in". When the F/O

announced “runway in sight”, they both made the comment that the “trees look a lot bigger than they should”. The trees looked closer than what he thought they should have and he was surprised that they looked so close. He thought it might have been an optical illusion. They were within a mile of the runway. He immediately added power and pitched up about 50 feet and leveled off his altitude until they visually picked up the VASI, which indicated red over white, which was normal.

He was cognizant of the trees and the terrain when flying into IRK. IRK airport had one of the highest terrains that they operated into. He had heard no concern in the crew lounges over flying into IRK.

If he was performing a VOR /DME approach and did not see the IRK airport when he reached 1320 feet altitude, he would level off his altitude until he reached 1.1 DME on the LOC. When asked if a NFP would callout when he had ground contact, he responded that there was no procedure to. He said he personally would call ground contact.

He would keep the flaps at 20 degrees until the NFP called the runway in sight and then would transition to visual and state “going visual leaving minimums” then “flaps 35”. This was the company procedure. The 35 degree flap setting was the landing flap setting. Extending the flaps to 35 degrees gave a nose up tendency to the airplane. You would counteract this with trim. He flew an approach at 130 KIAS until he was in a position to slow to Vref crossing the threshold. He should be at “ref” speed 50 feet above the runway threshold.

On the descent from 2,500 feet into IRK, he would descend to minimums as quickly as possible to afford as much time as possible to see the airport environment. He would usually descend at about “500 to 800 feet per minute or 1,000 feet per minute”. He did not recall what the company procedure was for the descent rate. He would use a descent rate that did not cause him to exceed the approach speed or the maximum landing gear speed. He did not recall what descent rate he had been trained to use during simulator training on non-precision approaches. He would not descend below the MDA of 1320 until he had the runway or the runway environment in sight.

When asked about the transition from the MDA to 100 feet above TDZE, he responded that when the NFP called approach lights in sight, he would take a quick peek to verify that it was the approach lights and then he would stay focused on the flight instruments in the descent until he heard the NFP say “runway in sight” and then he would transition to looking outside the cockpit.

When you were cleared for an approach, you would select “0s” on the altitude selector and when you were cleared to land, you would select “49000”. There was no procedure to select the missed approach altitude in the altitude selector.

He had not personally been too tired to fly while operating any of the company flight sequences.

On the day prior to the accident, he performed almost the same trip sequence the accident pilots flew on the day of the accident. The trip sequence consisted of eight flight legs.

When he arrived in IRK on his sequence, he was a little tired, but still felt like he was making good decisions. The F/O on the sequence never said he was tired and he appeared normal and not sluggish.

During his captain upgrade training, he had 5 simulator sessions then a check ride. During the simulator training, he had about 10-15 non-precision approaches of which about 5-7 were localizer approaches.

FP callouts during an LOC approach would be

"Flaps 10"
"Gear down – flaps 20" - "Before Landing Checklist"
"Going visual – leaving minimums"
"Flaps 35"

NFP callouts during an LOC approach would be

"LOC alive – crosscheck no flags"
"Flaps selected - indicating 10 degrees"
(He would go to the before landing checklist and perform it. It was a challenge and response checklist.)
"100 feet above minimums" [1420 feet at IRK]
then he would callout either "approach lights in sight - continue" and/or "runway in sight" or he could call the missed approach point.

He said he did not recall if it was a company procedure that he should call "minimums". He did not call out any deviations from the localizer.

If he was the FP and was a "dot off" the localizer, he would call out "missed approach" and perform a missed approach. He would expect a F/O to tell him if he was off course. If a F/O was off course, he would make him aware that he was off course.

If there was a deviation below the MDA, the NFP was not required to call out any "altitude deviation". He did not recall any procedural callouts that were required from the NFP if there was a deviation from the LOC or the glideslope or a deviation below minimums.

The airplane would say "minimums" when it arrived at whatever altitude had been selected on the radio altimeter.

He did not recall what parameters would cause the GPWS to say "sink rate" while on an approach. He did not recall if there was a GPWS aural alert that said "Flaps".

Corporate Airlines crew pairing rules were that one of the pilots had to have more than 100 flight hours in the airplane. This was a mandatory company rule.

The accident pilot was not a domineering type of person nor was he a type A personality. He would have looked forward to flying with the accident captain.

With a 0544 departure time at an out station, he would show for duty 30 minutes before departure time and would probably awake about 0430 to get ready. He would have gone to bed about 2130 the night before.

A crew duty day from 0544 to 1934 was not an excessive duty day. It was a typical eight leg duty day.

The company manuals for the pilot were the airplane manual and the flight manual.

On the IRK layover, the Days Inn hotel was about a 10 minute drive away from IRK airport.

His upgrade instructor was John Downing and the upgrade training was performed at Flight Safety in STL.

Flights to IRK were not normally weight limited.

Interview: George M. Carmo, Corporate Airlines Captain/IOE check airman and instructor
Date: October 24, 2004
Location: American Airlines, Saint Louis, Missouri
Time: 1530 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, Captain Carmo stated the following information:

He had flown with the accident F/O, John Palmer and had conducted his IOE.

His date of hire at Corporate Airlines was August 22, 2000. He upgraded to captain on September 2, 2002.

He had about 4,400 hours total flight time. He had about 2,700 flight hours in the Jetstream 3201 of which about 1,200 hours were as PIC and 1,500 hours were as SIC.

From March, 1999 to August, 2000, he was employed as a flight instructor on Cessna 152, 172, 182 airplanes in Wilmington, North Carolina. From August, 2000 until he was hired by Corporate Airlines, he worked as a flight instructor in Ames, Iowa.

He said he knew Captain Sasse when they were both flying out of the Raleigh, North Carolina station. He socialized with him in the crew room. He had never flown with Captain Sasse. He said that when he observed the accident crew in the crew room they would be laughing and having a good time.

He said he "basically" knew the accident F/O Palmer from work. He did not socialize with him. He said F/O Palmer was relaxed, down to earth, very easy to talk to, accepted criticism, and was a pleasure to fly with. He said F/O Palmer had outstanding pilot skills.

He used excellent procedures while flying and was very consistent in his procedures. He could not recall ever having to correct him.

He had performed IOE on F/O Palmer for 1½ weeks. The IOE consisted of about 22 – 24 flight hours. During F/O Palmer's IOE, they performed several visual approaches, no ILS approaches, a couple of LOC approaches, and an NDB approach.

Captain Carmo said he personally had flown into IRK more than 50 times.

Captain Carmo was asked about the simulator training he had given since becoming an IOE checkairman. He said he had taken one crew all the way through the simulator training and had conducted many different types of approaches. He did a good mix of approaches, one of each type of approach and went into a different airport each day.

Captain Carmo was then asked about approach procedures:
He said that while being vectored to the final approach course, the FP should slow to 170 KIAS. The NFP should announce "course alive" when the indicator began moving and then state "cross check – no flags". The FP should then call for the flaps to be extended to the 10 degree position. The NFP would then state "selected, indicating 10". The speed would be reduced to 160 KIAS about 3-4 miles outside of the FAF. The FP would call for "gear down, flaps 20, before landing checklist". The NFP would lower the landing gear. The FP would slow the airplane to130 KIAS prior to reaching the FAF. The NFP would call passing the final approach fix. The FP would acknowledge the NFP's FAF callout. The FP would then start a descent to MDA. The FP would reduce the engine power to maintain a speed of 130 KIAS and a 1,000 fpm rate of descent. The rate of descent could vary depending on conditions such as an appreciable wind factor. The FP should "get down to MDA as soon as possible to look for the airport. A "descent rate of 1,000 [fpm] is what we strive for". The NFP should announce "100 above" when they were 100 feet above MDA. The FP should then start his level off at MDA. The NFP should announce "minimums" based on his altimeter. The NFP should call "runway in sight" (if the runway was not at the 12 o'clock position, he should give the relative position on the 12 hour clock). The FP should announce "going visual", "leaving minimums, flaps 35". If the VASI was indicating red over red, the FP should not descend until the VASI indicated red over white.

Captain Carmo was asked about the descent profile if only the approach lights were seen when the airplane reached MDA. He said if the NFP should state "approach lights in sight, continue". The FP could then descend to 100 feet above TDZE while leaving the airplane configuration the same. When asked what rate of descent should be used to 100 feet above TDZE, he stated "not very much because of the distance[to airport] - 200 to 300 fpm would be acceptable".

Captain Carmo was then asked about his familiarity with IRK and he stated he thought the land was undulating. He said "it's not a flat terrain area" and "during the day it is obvious it is not flat." He said he did not recall if the trees on the IRK approach course stood out to him, like they were too close. Captain Carmo was asked if he was aware of any distracting lights on the approach course in IRK. He stated that he thought it was the opposite. It was "dark and no lights".

Captain Carmo was asked what aural warnings the airplane annunciated and he stated he knew it called out some items. The airplane would announce 'minimums" based on the captain's radio altimeter and the callouts were consistent with what was set in the captain's radio altimeter. He said he thought the airplane called out "500" feet.

Captain Carmo described the GPWS aural callouts including the "TERRAIN, TERRAIN" and "SINK RATE" alerts, but said he did not recall what parameters would set each alert off.

Captain Carmo was asked what was the company procedure for responding to an aural warning of "PULL UP". He stated the pilot should physically increase the engine power to maximum power, call "MAX POWER, FLAPS 10, POSITIVE RATE, GEAR UP". The NFP would position the flaps and retract the gear. The FP would then pitch up the airplane and climb.

Captain Carmo was asked what was the company procedure for responding to an aural warning of "SINK RATE". He stated the FP should "reduce the rate of descent".

Captain Carmo stated that the stabilized approach criteria in the company flight manual was:

- Between 2000 and 1000 feet AGL - a maximum rate of descent of 2,000 fpm
- Between 1000 and 300 feet AGL - a maximum rate of descent of 1,200 fpm
- Between 300 and 50 feet AGL - a maximum rate of descent of 900 fpm

Captain Carmo was asked what he would expect a F/O to do/call out if a captain (FP) exceeded the stabilized approach criteria, i.e., excessive descent rate. He stated there was no procedure for the F/O to call out any exceedance.

Captain Carmo was asked about course deflection issues. He stated the NFP should callout if the FP was "1 dot below glideslope" or off course one dot. The FP should begin correcting the deviation and state "correcting". He said that was the procedure he trained when he was training in the simulator and when he giving IOE. He said this would be the same procedure for any airspeed deviations. The NFP should call out if the FP went more than 5 knots below the target airspeed. He said the callouts were standardized as far as deviations to the glideslope and the localizer.

Captain Carmo was asked if he ever had any problems with the pilots he trained, either in the simulator or while conducting IOE and he stated he had never any problems with any of the pilots at Corporate Airlines. He said he had trained three pilots in the previous six months.

Captain Carmo stated the weather reporting facility at IRK was being relocated prior to the accident and was not available the day before the accident. He was concerned if moving the weather reporting facility affected the facility giving the correct altimeter setting.

He did not think the crew duty times were excessive and said they were reasonable.

The flight sequences were designed to get pilots the proper rest periods. Company rest periods were within the FAR regulations. There were some line pilots that "sometimes" complained about the duty times, but he thought most of the complaints occurred on bad weather days. There was no real consistent griping or complaining about the schedule. A pilot could ask to be relieved if he was tired during a sequence and there would be no repercussion from the company.

He said that on the day of the accident, the departure time for the first flight by the accident crew was 0544 and the crew had been on duty over 14 hours when the accident occurred. He was concerned that the flight time and duty regulations reflect when you show for duty not when you awake. The scheduled duty was within FAR regulations. He said crew duty days of 16 hours would be more appropriate for airlines with autopilots in the airplane. He thought that the FAA regulations should be changed to reflect that the lack of an autopilot could increase crew fatigue especially when operating in adverse weather. Truck drivers had to have 10 hours of rest before going on a 14 hour duty day.

Flight crews could have as little 8 hours of rest and then end up having a maximum duty day of 16 hours. This did not happen very often, but could happen.

He said Corporate Airlines CRM training was "great". CRM training started from day one in ground school. It was actually incorporated into the training. He thought most F/Os would speak up if they felt they had to.

Interview: David Gerald Coleman, Captain Corporate Airlines
Date: October 22, 2004
Location: American Airlines, Saint Louis, Missouri
Time: 1730 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, Captain Coleman stated the following information:

He was 31 years old. His date of hire with Corporate Airlines was March 20, 2001.

His total flight time was about 4,480 hours. His total flight time on the J32 was about 2,300 hours. His PIC flight time on the J32 was about 1,375 flight hours. He had flown 29 hours on a B-737. He had previously worked for a commercial airplane ferry operation. Corporate Airlines was his only Part 121 airline experience.

He flew with F/O Palmer on the F/O's first trip sequence after completing IOE. The last flight of the sequence was on September 29, 2004. They flew approximately 37 hours over a three-day period. Captain Coleman said F/O Palmer was highly motivated, with above average pilot skills, and an "eager to learn" attitude. He thought that over the 37 hours they flew together, F/O Palmer's skills improved greatly as he "matured" in the position. He believed F/O Palmer possessed very good CRM skills, and quantified them with the comment, "I would have enjoyed flying with him over several months." He also

described a maintenance situation in which he sought to evaluate F/O Palmer's judgment. When he was presented with the facts, the F/O chose to write-up the discrepancy for maintenance action. Captain Coleman had been so impressed with the F/O's performance that he was going to write a positive first officer evaluation letter on him.

He had never flown with Captain Sasse and stated they had been in the same new-hire class together. He described Capt Sasse as an acquaintance.

Captain Coleman said he had flown into IRK approximately 150 times as either Captain or F/O during his 2,300 hours in the Jetstream. His most recent flights into IRK were on October 7, 2004. He said the weather had been IMC and he had flown the Localizer/DME approach to runway 36. During the night leg to IRK, he had flown the approach twice because the first approach resulted in a missed approach. He was asked if he remembered why he missed on the approach. He said that by the time he felt comfortable leaving the MDA, they were no longer in a position to make a safe descent for landing since they were above the glide path. He could see the approach lights five miles out, but felt unsafe to descend. He maintained his altitude at the MDA because there was no "runway in sight" call from the F/O. He recalled the weather at the time was 500 feet broken, two-three miles visibility with rain.

He was asked how he would fly the LOC DME 36 approach into IRK. He stated that when he was within 10 miles of the airport and was established on the localizer, he would call for Flaps 10 when he was at 170 KIAS. When he was cleared for the approach, he would descend to 2,500 feet. At 8 miles, he would configure the airplane with "Gear Down, Flaps 20, and perform the Before Landing Checklist." He said he would use the flight director if the ceiling and visibility were reduced. He said his personal standards were to use the flight director if the weather was less than 1,000 feet on a non-precision approach and less than 700 feet on a precision approach.

He said he would expect the F/O would call "localizer alive," and "nav capture" when the flight director was in use. He added that, as they were passing the FAF, most F/Os would call something like "there's Kemmy" but there were no written procedures to do so.

He was asked how he would fly from the FAF inbound. He said at Kemmy he would state "out of 2,500 for 1,320," reduce the engine torque to about 20% and maintain 130 KIAS with a descent rate of about 1,500 fpm. At 1,520 feet, he said he would increase engine power to about 45% torque and level at about 1,420 feet, then slowly descend to 1,370 feet where he would stay until he heard "runway in sight" from the F/O. He said the F/O would call "100 feet above" at 1,420. He added that he would use the flight director altitude hold feature. He would also use the "NAV"[navigation] mode for directional guidance.

He was asked how was he trained to descend on a non-precision approach. He said he could not recall how he was initially trained.

He was asked "do you respond to the "100 feet above" call. He said there was no requirement to respond.

He was asked if he would hear the F/O call "minimums" He said "maybe not", because he actually stayed 50 feet above the MDA, they would never actually reach "minimums." He said he would remain above the MDA until the F/O called "runway in sight" or "missed approach." He said he would not begin a descent until he was sure it could be done. He said Corporate Air did not teach him that procedure. His Dad taught him to fly that way. His Dad was a professional pilot who flew all over the world and taught him to fly safely and wisely.

He was asked what would he do when the F/O called "runway in sight". He said he would look to see if a normal descent to landing could be made.

He was asked if he had ever broken out of weather at IRK and felt the trees were too close. He said no, he stayed above minimums.

He was asked what were the NFP calls on an approach. He said the NFP would call "100 feet above," then "minimums." He stated there were no other standard calls on the approach, but said most pilots would say if you were too high or too low although the NFP was not required to make those calls.

Captain Coleman said he believed they were required to say when you were off course, but there was no standard phrase. Captain Coleman asked if he could look it up and went to the Stabilized Approach section of the flight manual. After referencing it, he stated this section required the flying pilot (FP) to stay within these parameters, or for the NFP to announce the deviation. He also stated this reference did not dictate the procedure to identify the deviation. "Nonetheless", he did believe the NFP would speak up.

He was asked what calls does the aircraft make from the FAF inbound. He said the radar altimeter said "500 feet" and "minimums." You may get "sink rate" if you were in a steep descent.

Captain Coleman said he always operated conservatively. He was asked if he ever heard anyone talking about "ducking below" the MDA, he answered "no one, absolutely no". He said the pilots were "all business".

Captain Coleman said there was no company guidance as to what weather might limit the F/O from making an approach as long as they met the company flight experience limitations for two pilots flying together.

He said he felt company CRM training was adequate. He said he could not recall how CRM was taught in initial training or recurrent training. He said the pilots had very good CRM, because Corporate Airlines was "catching" people at the beginning of their careers and applied good procedures and training.

Captain Coleman said we should look at the brightness of the approach lights versus the runway lights and the VASI at IRK. He stated the approach lights were so bright you could not see the VASI lights until you were close. He described how he had performed a missed approach because he could not see the VASI or runway lights until passing the point from which he could make a safe descent for landing.

He had not had any accidents /incidents/enforcements.

Interview: John Victor Ward, First Officer, Corporate Airlines
Date: October 23, 2004
Location: Corporate Headquarters, Smyrna TN
Time: 1230 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, F/O Ward stated the following information:

He was 39 years old. His date of hire with Corporate Airlines was July 23, 2001.

His total flight time was about 2,980 flight hours. He had about 1,500 flight hours as PIC. He had about 1,300 flight hours on the Jetstream 32.

He previously was employed as a flight instructor from 1992 to 1993 with the Scott Air Force Base Aero Club at Scott Air Force Base in Illinois. He instructed in Cessna 152, 172, and 182 airplanes, as well as the Piper Seminole, and a multiengine airplane. From 1993 to 1995 he was employed as a police officer in New Baden, Illinois, and from 1995 to 1997 as a trainman with CSX railroad. From 1997 to 2001, he was employed with the Bridgestone Tire manufacturing company.

He had flown with the accident captain. He most recently flew with Captain Sasse on September 14/15, 2004, on a two-day trip sequence, which had about six flight legs. He socialized with Captain Sasse at work only and never off duty. He characterized Captain Sasse as fun to be around, witty, and easy going. He rated his flying skills as above average, and rated his CRM skills as good. He said Captain Sasse set a "good tone" in the cockpit and that he always felt that if there was a problem he could speak up freely. He said Captain Sasse would not feel shy about bringing something up. He said he always felt Captain Sasse would bring anything up to him that he considered important and he did not perceive him as being shy about this. He said that during the time he flew with Captain Sasse, he had never experienced any problems that pertained to weather conditions. He recalled that he had previously flown into IRK with Captain Sasse five to seven times, and there were no bad weather flights, no low ceilings, just windy conditions.

He said he felt the company's CRM program was good and that he had received approximately three hours of CRM training during his initial ground school. He felt he could speak up with most captains, and that if a captain ever responded to him in a derogatory manner after he had brought something to the captain's attention, it would not bother him. He said most captains do not have a problem with the first officers speaking up.

When asked if he had ever heard other pilots talking about any concerns with going into IRK, he said that he had and that the comments were about how close the trees appeared when you broke out [of the clouds] on an instrument approach.

During an approach sequence as the non-flying pilot, he said he would call "course alive" and the flying pilot would call "flaps 10" when the localizer became active. At about three to four miles outside of the final approach fix, the flying pilot would call "gear down, flaps 20, before landing checklist," and at the final approach fix (KIMMY in this case) he would call, "here's KIMMY, 5.2, we can go down 1,320." He said that was just something he did. He said that from 2,500 feet to 1,320 feet altitude, he would expect to see the flying pilot using a rate of descent between 700 and 800 feet per minute and to reduce the power during the descent. He said he would use a descent rate of 800 to 900 feet per minute. When he was asked what descent rate he was taught in his training at Corporate Airlines, he said he "honestly did not remember". He said that if there were any deviations during an approach, he would speak up and bring them to the captain's attention. He said he would speak up if they were ½ dot left or right of the localizer, but said that this procedure was not in the company's flight manual. He said that as the descent to 1,320 feet continued he would say "100 above minimums" at 1,420 feet, and at 1,320 feet he would say "minimums." He stated he would be looking "in and out" of the airplane at this time for the runway environment, and when he saw the approach lights, he would state "approach lights in sight, continue." When the runway or airport was in sight, he would call the airport position relative to the clock position. He said that when the runway or airport was in sight, you could go down to 100 feet above the touchdown zone elevation (TDZE), and that the FP would then state "leaving minimums, flap 35."

When asked again about the "approach lights in sight, continue" call, and asked if most captains would stay at MDA or go down, he said that they would start down at a slow rate of descent about 100 to 200 fpm until they got the VASI in sight. He said the VASI lights would be showing red over red "a ways out", and that they could go down to 1,064 which was 100 feet above the touchdown zone after the approach lights were in sight. He said he would stop the descent until the VASI was "captured", then begin a descent. He would maintain flaps 20 until he got red over white on the VASI lights, at which point the flying pilot would state "leaving minimums, flaps 35." He was asked if he would say something to the FP if he dropped below 100 feet above the touchdown zone before getting the runway lights and he said "YES, the callout is in the manual".

He said that the aural annunciations the airplane made were "500" and also "minimums". He said he had only flown two or three non-precision approaches to a low ceiling since he had been with the company.

He said he never considered himself overtired on any of his trips, although at times he did feel the duty day was too long, but he had adapted to it over the two years he had been with the company. He said he had never called in to request relief for being too tired to fly, but that he could if he elected to do so. He stated that as far as he knew he would not suffer any repercussions if he did call in due to being too tired. He said that he knew of other pilots who had called in too tired to fly, and said it was the open policy of the company, "don't fly if tired"

If he was the FP and saw red over red on the VASI lights, he would stop the descent. If he was the NFP, he would challenge a continued descent by the FP and would expect the FP to stop the descent. It was not a written procedure, but he was trained in the simulator to challenge the FP and repeat the challenge if necessary to stop the descent. If necessary, he would take command of the airplane.

He said when he was a new F/O and he was to challenge a captain, he thought "…you had better be right." He said that he had never, in fear of reprisal, "let anything go" that had to do with safety as far as bringing it to the captain's attention. He said he felt pretty good about the flight and ground training the company provided. He characterized training as "fast and furious, like a fire hose", but said the instructors answered all questions they [students] had and said he felt good when he was done with his training.

Interview: Robert Burnett Looney, Director of Training, Corporate Airlines
Date: October 23, 2004
Location: Corporate Airlines headquarters, Smyrna, Tennessee
Time: 1430 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, Captain Looney stated the following information:

He was 58 years old. His date-of-hire with Corporate Airlines was October 21, 1996.

He had about 13,400 total flight hours. He had about 3,200 flight hours as PIC on part 121 certificate carriers. He had about 3,200 flight hours as captain on the Jetstream 3200. He flew as F/O on the Saab 340 at American Eagle for about 4,100 flight hours.

He was in the United States Air Force from Aug 1969 to Aug 1990 and flew the T-37 airplane for 8 years, and the C-130 airplane for about 2 years and also the T-39 Sabreliner, the T-38, and the EC-47 airplanes.

From June 1991 to October 1996, he worked for American Eagle Airlines and was based in BNA and ORD and flew the Saab 340 as F/O.

He had been a check airman at Corporate Airlines since 1998. He was a simulator check airman and airplane check airman. At one time, he was a FAA designated examiner on the Jetstream 3200 until the designated examiner program was discontinued at Corporate Airlines.

He filled in as an instructor in the ground school at times.

F/O Palmer had a good personality. He always had a joke to tell but was serious when he needed to be. He had an unsatisfactory grade on the systems test, which was a surprise. He retested the same day and made an 89 score. He thought F/O Palmer would have been unafraid to speak up if there was a safety concern. He gave F/O Palmer some ground school systems training. He also conducted a proficiency check in the simulator

and in the airplane on F/O Palmer. He remembered the airplane proficiency check and was satisfied with the F/O's performance. F/O Palmer was one of the really sharp people in the ground school and in the simulator. He did not give F/O Palmer any additional training during the proficiency check. The F/O proficiency check was a two-part check with one part conducted in the simulator and one part conducted in the airplane. Non-precision approaches were performed during the simulator part of the proficiency check. The precision approaches were performed in the airplane part of the proficiency check. Comments from other instructors indicated that F/O Palmer and his simulator partner were doing exceptionally well in the simulator training.

He had conducted a proficiency check on captain, Sasse at the same time the FAA was giving him a type rating check. Captain Sasse did not want to take his type-rating ride initially because he was concerned he would be unsatisfactory because the tiller in the simulator had caused him trouble tracking the airplane down the center of the runway. Before the type-rating ride, he gave the Captain Sasse about a ½ hour of instruction. Captain Sasse did well during the instruction and performed well on the type rating check ride. Captain Sasse had no major problems during his simulator training. Capt Looney was not aware how he did during his IOE, and did not recall hearing anything. In response to a question about the Captain Sasse's simulator training when he was a new-hire F/O, he responded that the training records appeared to indicate that his performance was a little below average. Captain Sasse had trouble as a F/O trainee during the number six training period which would have been the first ride in the airplane when they would do turns, stalls, and some precision approaches. Capt Sasse failed a recurrent simulator training ride on Jan 13, 2004 when he failed on: (1) a power failure during second segment climb (2) a precision approach landing with the most critical engine failed. He had a recheck on Jan 15, 2004 and passed the training ride.

Capt Sasse had owned a computer company and was making good money before he decided to come fly for Corporate Airlines.

Since Corporate Airlines was a small airline and everyone worked together, he would not keep someone employed if the company did not like his personality.

The captains and F/Os were generally close in age, so there was usually no hesitation to speak up. The company stressed that the Jetstream 3200 was a two-man airplane.

Capt Looney had given about 200 or more type rating check rides. He said that maybe 20 or 25 were failures. Most of the check ride failures were single item busts.

He said a "sink rate" aural callout from the GPWS would be caused by a higher than normal descent rate. You would usually see that when the pilot did not see the runway until late in the approach and had a steeper than normal descent rate while making the transition from MDA or DH to landing even though the pilot might not be exceeding the stabilized approach criteria. The closer the airplane was to the ground the less the descent rate it would take to get a "sink rate" alert.

Company policy was that if a pilot got any GPWS alert, it should be noted and he should acknowledge what was happening and respond how he was correcting.

During simulator training periods, pilots would each receive about eight non-precision approaches. The LOC approach was the easier approach so pilots were usually given more VOR or NDB approaches. This was usually a weak area for new-hire pilots. The non-precision approach profile had the airplane configured and at the correct airspeed when it arrived at the FAF. New pilots would often arrive at the FAF not configured or not at the correct airspeed. At the FAF fix, he liked to see the airplane at 130 KIAS, flaps set to 20 degrees and the engine power set. He trained that, during a non-precision approach, a pilot should descend at about 1,000 to 1,200 fpm from the FAF fix to the MDA. If you used a shallower descent rate, you would arrive at the MDA altitude at about the MA point.

The stabilized approach criteria in the flight manual stated that the maximum descent rate on an approach could initially be 2,000 fpm to the MDA.

If he was the FP on the LOC approach into IRK and he was at the MDA altitude and the NFP called out the "approach lights", he would begin a descent toward 100 feet above the TDZE. He would then use a descent rate that would be equal to a normal ILS descent rate or about 500 fpm. During this descent, his attention would remain on the instruments inside the cockpit until the NFP called the "runway in sight". He said they "make a big deal" in training about specific calls. When the NFP called "runway in sight", the FP would look outside the cockpit to identify the runway and then would alternate his attention from outside to inside the cockpit. If the FP saw the VASI lights indicate red over red, he would stop his descent until the VASI indicated red over white. When he had the runway in sight, he would make the necessary descent adjustments for landing. That was the way the flight manual stated the non-precision approach should be flown.

The MDA at IRK was one of the lowest he had ever seen for a non-precision approach.

If the FP descended below the MDA with no lights in sight, he would expect the NFP to call "altitude". This was not a procedure that was written in the manuals, but was how the pilots were trained in the simulator.

Altitude callouts on a descent below MDA was a technique not a procedure. After you start an approach, it was supposed to be "almost a silent approach". There was not many callouts required so the pilots could focus on the approach.

The company encouraged the NFP to call out any deviation from glideslope, LOC or altitude. He saw most NFPs call out deviations during training even though it was not required in the company manuals. The callout of a deviation was taught as a technique by most instructors.

He told new-hires that the training program was fairly compact and they should ask questions if they did not understand anything. The instructors would work extra hours with the students if needed.

The company had a web site so that new hires could obtain some information before they arrived for training including airplane limitations and memory items.

They taught the information a trainee needed to pass the tests but they did not teach the tests. During ground school, if a trainee received a second UNSAT on a test, they would be let go. They have lost up to 25 % of the new trainees in some ground school classes, which was the highest failure rate that he was aware of for ground schools.

During simulator training, a trainee would usually receive five simulator periods. If a student was not ready after the five simulator periods, he would not be put up for a check ride. They had released several students from employment at that point, however if the trainee only needed a little more training, he would receive it, however they would follow-up later to monitor his progress. A second failure during upgrade training was usually the last and the pilot would be released from employment.

Ground school consisted of three weeks of training. The training contained basic indoctrination training, performance training, weight & balance training. The systems training took about a week. Additional training included check list philosophy, cockpit flows and panel scans and testing. Trainees would practice the cockpit flows in the cockpit procedures trainer (CPT).

A pilot did 85% of his flight training in the simulator and then would go to an out station for the rest of his flight training in an airplane. The first night of airplane training would be pre-flight training only. The second night of airplane training included stalls, turns, etc. They tried to end the airplane training before 2230 or 2300. Company policy was that the airplane training was to be completed no later than midnight.

During IOE, they would try to do one complete flight sequence with the pilot. The minimum flight hours for IOE was 20 hours but the hours could be reduced by landings. They could reduce the number of hours by as much as 50%, however this was not the usual occurrence.

Although he maintained his currency, he did little actual flying. He had not performed any line flying in a couple of years.

Hal Cutler was the assistant POI for the airline. The company had a good relationship with the FAA. The FAA often sat in during ground school sessions and was often in the simulator during training. The FAA also drove to a lot of their out stations to do inspections. The POI and the APOI were a very active pair of inspectors and the company got good feedback from both of them.

The company used to give new pilots a simulator check before they were hired but did not do that anymore. They had to stop that practice this year because the simulator they were using became inoperative and had not been replaced.

Interview: Eric Neal Stout, IOE check Airman, Corporate Airlines
Date: October 24, 2004

Location: Corporate Headquarters, Smyrna TN
Time: 0800 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, Captain Stout stated the following information:

He was 39 years of age. His date of hire with Corporate Airlines was February 8, 1999. He had about 9,300 hours total flying time, about 3,300 flight hours as pilot-in-command under FAR Part 121 in the Jetstream 32 aircraft, and about 900 hours as a first officer in the Jetstream 32.

His previous aviation background included working as the assistant chief flight instructor for Middle Tennessee State University at Murfreesboro, Tennessee, from August, 1993 to February 5, 1999. Prior to that he was the chief flight instructor at Air Academy in Smyrna, Tennessee, from January 1, 1991 to August 8, 1993.

He gave Captain Sasse his initial first officer airplane flight training in March, 2001, at Marion, Illinois. He also did an FAA observation ride with Captain Sasse in 2003, however, he could not remember if he flew with him after his initial training. He said he knew Captain Sasse fairly well and saw him and F/O Palmer in the St. Louis, Missouri crew room throughout the day of the accident. He said Captain Sasse had a very good sense of humor. He said, on the day of the accident, Captain Sasse had some flights that were canceled so he slept quite a bit and was sleeping most of the morning. He also said he remembered seeing both Captain Sasse and F/O Palmer going to lunch that afternoon and the captain was in a joking mood. He was not aware of any health problems with the accident crew, and said he did not socialize with Captain Sasse. Captain Sasse lived in New Jersey and that there was not a lot of time to socialize when not working. He did not know of any problems that Captain Sasse might have had at home. He said the captain was a very energetic person and was in good shape physically and looked younger than he was.

He said that when he gave Captain Sasse his first officer airplane training in 2001. He initially did a walk-around, single-engine and multiengine approaches, and a simulated engine shutdown. The approaches included an ILS, a missed approach, an NDB approach, and a holding procedure. He said Captain Sasse had some problems with the NDB when he turned the wrong way on the holding entry. He also said Captain Sasse got off his heading and altitude during a simulated engine failure, which resulted in him receiving an "unsatisfactory" on heading and altitude. Specifically, Captain Sasse had gained about 200 feet but did not lose altitude. The next night that he flew with him, Captain Sasse still had trouble with the holding procedure. The following night the director of training flew with him and the flight and holding procedures were satisfactory. During flight training, Captain Sasse performed single and two-engine ILSs, and an NDB approach. He was not sure if Captain Sasse performed a VOR approach during the training. He said he would not have done a localizer only approach because the glideslope would have been present.

He characterized Captain Sasse's airplane flying skill as being very smooth, like "an old man." He said Captain Sasse knew the airplane systems well, was good with his preflight, and knew the central annunciator panel (CAP) well. He stated the captain's CRM skills were good on an observation flight he had with him. He commented that Captain Sasse worked very good, "back and forth" relative to crew coordination concepts.

He commented about F/O Palmer having taught at Sporty's Flight Academy sometime prior to coming to work at Corporate Airlines. He said that he must have been real sharp, since they don't just hire anyone there.

Captain Stout was asked about stabilized approaches. He described the "3 stages" relative to stabilized approaches: (stage 1) from 2000 feet to 1000 feet AGL, the rate of descent should not be more than 2000 FPM; (stage 2) from 1000 feet to 300 feet AGL, the rate of descent should not be more than 1200 FPM; (stage 3) from 300 feet to 50 feet AGL, the rate of descent should not be more than 900 FPM. He said the stabilized approach criteria for a non-precision approach was to configure outside of the FAF, get down as early as you can to MDA to pick up the runway environment.

He said it had been about a year since he had been into IRK and that he recalled the localizer as being "rather loose". It seemed like the localizer course was not exactly lined up with the runway lights and runway.

He stated that he had not heard anything about IRK or the runway 36 LOC approach from other pilots. He said that on the day of the accident, other pilots in the crew room were talking about how close the trees were on an approach, but he was not sure if this was in reference to IRK or the Fort Leonard Wood airport.

He said he would expect the NFP to speak up about any descent and speed deviations. When asked if he was aware of anything in the company flight manual that addressed the NFP calling out a deviation, he said, "No, only what we teach." He stated that if the FP went below 130 KIAS, he would expect the NFP to say something immediately. He said the F/O should immediately query the captain about a deviation or something that he saw that was not right. He said that he would feel comfortable with any new first officer speaking up and calling out any deviations relative to rate of descent, localizer, or glideslope. He then related an instance when he was the FP during a flight into Marion, Illinois and he and his F/O's altimeters did not agree on a VOR approach. He stated the F/O called out the discrepancy. After the flight, when he and the F/O were talking about the altimeter situation, F/O Palmer was listening to the conversation.

He said that the last time he flew into IRK was early in the summer, maybe 4 months before. He said the airport was not easy to find at night and the area was not very well lit. He said he did not feel that air traffic control had very good radar coverage there and the airport was in a "big open area".

He said that he did not feel there were problems with the flight sequences. There were some layovers more than 9 hours but less than 10 hours. He did not have a problem with feeling tired on the sequences. He stated that you could cancel off a trip if you were

tired. He never heard of anyone getting in trouble for canceling out of a trip if they were tired. He said if a trip sequence looked like it might be possibly be illegal, it would be removed or changed.

Interview: Christopher David Hardee, full-time training instructor and PC check airman.
Date: October 23, 2004
Location: Corporate Airlines Headquarters, Smyrna TN
Time: 1000 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, Captain Hardee stated the following information:

He was 29 years old. His date-of-hire with Corporate Airlines was June 18, 2001.

His total flight time was about 2,500 flight hours. His PIC time on the J32 was about 245 flight hours. He had about 1,100 flight hours as SIC on the J32.

He performed simulator training and some ground school training for the accident F/O.

He had previously been a flight instructor at Gwinnett Flight School in Atlanta, Georgia, where he was the assistant chief flight instructor.

From May, 2000 thru June, 2001, he was a student at Middle Tennessee State University (MTSU).

He had been a ground school instructor at Corporate Airlines since January, 2004. He began instructing in the simulator in May 2004. He stated that F/O Jon Palmer was his first new hire student. He had taught others in the simulator and had performed some recurrent training.

He said F/O Palmer and his simulator partner did very well during training. They made some normal mistakes but learned from them and had no major problems. F/O Palmer was an excellent student. F/O Palmer was knowledgeable in procedures and systems. He was a laid back guy. He belonged in the airline business. He "exuded" being a pilot.

When he was asked about an "unsat"[unsatisfactory] F/O Palmer had on the second day of simulator training, he said F/O Palmer had an "unsat" for a flaps 35 stall procedure when he had some trouble maintaining altitude. F/O Palmer was barely outside of the Practical Test Standards during the maneuver. F/O Palmer also had an "unsat" on a holding maneuver.

When asked what he taught for stabilized approach criteria, he stated he taught it out of the Flight Manual.

He had flown the same trip as the accident crew before, but not recently. He had flown into IRK about eight times under similar weather conditions as the accident flight. On one flight, the weather was not what had been reported for IRK and they had not expected bad weather. They received bad vectors from ATC and had to perform a missed approach. He said the weather had been reported as about 1,000 to 1,200 feet with broken clouds, The weather was actually a couple hundred feet lower and more solid than broken. He said they did not "break out" low on the approach. Once they broke out it was black and they saw runway lights. He said the most remarkable thing about IRK was there was no town nearby so there were no lights around except the runway lights. He did not recall what kind of approach lights were in IRK.

H had heard no pilot concerns about IRK in the crew room.

For the profile for the approach into IRK, he would instruct a pilot to configure the airplane 3-4 miles before Kemmy which was the FAF. At the FAF, he should start a 1,000 to1,500 FPM. descent. He should leave minimums when he could transition to safely land. When he was asked if the FP could descend if the NFP called the approach lights in sight, he stated you could go down to 100 feet above the TDZE, but he would be careful depending on how close to the runway you were. He would not want to start down to 100 feet above the TDZE too early. On a non-precision approach, it would be rare for a pilot to leave the MDA without having the runway or the VASI in sight.

He did not train any callouts for the NFP for any deviation from LOC because there were no callouts in the flight manual. He said he personally told pilots to keep track of the FP and be aware of deviations. He told pilots to bring up any deviations to the FP. He expected the NFP to bring up any deviations.

H did not socialize with F/O Palmer or Captain Sasse.

He knew Captain Sasse and had "just small talk" with him, but never flew with him,

He said if F/O Palmer saw something wrong, he would "absolutely" speak up.

When if he was flying the airplane, he had a GPWS warnings of "too low terrain" when flying into Burlington Iowa. He said he was flying at the circling minimums altitude when he received the warning. He added power and pulled up. He said they were trained to react, add power and pull up. The correct responses to an identified deviation were "noted" or "correcting". He said most pilots respond to an alert and the most common alert you heard was "Glide Slope".

If he was a new F/O and they were descending at 1,300 feet per minute on an approach into IRK, he would not be expected say anything. If he were the FP and the NFP called the runway in sight, he would "confirm it". He would not descend below MDA too early if there were no visual G/S clues.

If the captain were incapacitated, the first officer would react "without a doubt". Corporate Airlines "preached that it was a two pilot airplane". He told them to think like

a captain and act like a first officer. In the past, captains had included him in decision-making when he was an F/O.

If a first officer complained about a captain, he would talk to the captain. He said they were "pretty open here". He said there were no "one man operation" type captains at Corporate Airlines.

He flew on regular trips usually twice a month for three or four days a month.

He did not recall any problems with Kansas City ATC.

He said he showed students a saying at Flight Safety in STL that said "Focus on what's right not who's right".

He said it "wouldn't hurt" to have standard callouts for deviations.

Interview: Charles Wesley Jones II, FAA POI for Corporate Airlines
Date: October 24, 2004
Location: Corporate Airlines Headquarters, Smyrna TN
Time: 1330 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA; Charlie Brooks, Corporate Air

During the interview, POI Jones stated the following information:

POI Jones said he had been with Corporate Airlines since their very beginning. In fact, he had been the original certification project manager. In November 1996, Corporate Airlines was awarded their operating certificate and given their operations specifications and they began operating in December 1996. He had been the only FAA Principal Operations Inspector (POI) on their certificate.

He had served in several Part 135 operations gaining knowledge and experience. From 1980-85, he was employed at Miller Wils, a Part 135 Commuter Certificate where he served as an instructor and line check airman. From 1985-87, he worked at Professional Aviation in Jackson, Mississippi flying Citations, King Airs, and Turbo Commanders. He left Professional Aviation for a better job. For a short time in 1987, he was employed at Stevens Aviation in Louisville, Kentucky and flew King Airs, and Barons. He left Stevens Aviation because of a disagreement with management. From 1987-89, he was the assistant chief pilot at Atlantic Aero in Greensboro, North Carolina, where he flew Citations, King Airs, Cheyennes, Barons, etc. He left Atlantic Aero to join the FAA in 1989.

POI Jones estimated his total flight time at about 9,900 flight hours with about 7,500 flight hours as PIC in part 135 operation, but said he had no flight time in Part 121 operations. He possessed a BA-3100 type rating and had flown about one hour in the airplane and accumulated 60-70 hours in the simulator.

Inspector Jones said he twice had another operations inspector assisting him on the Corporate Airlines certificate. Prior to 9/11, Corporate Airlines had also operated from Raleigh, North Carolina on a code-share agreement with Midway Airlines. Inspector Rich Hutchins was his assistant during that time. During the airline recession that followed the 9/11 attacks, Midway had gone out of business and Corporate Airlines closed its Raleigh base. The current Corporate Airlines Assistant POI was Hal Cutler, who had served in the position for approximately a year and a half. Inspector Cutler had been placed in the position in response to growth Corporate Airlines had planned. Inspector Cutler had been with the FAA about five years.

When asked what other oversight responsibilities he had, POI Jones stated he also managed the Part 125 certificate for Red Apple, Inc, which operated a B-727. He said he had been in a very time-consuming enforcement action with the Red Apple certificate. The enforcement action was because Red Apple had attempted to fly some charter flights. He said he was also very affected by local implementation of the FAA Customer Service Initiative. He explained that he was required to remain in the office for a week at a time during which he could not accomplish any task outside the office. He was required to be in the office to assist any customers that might come to or telephone the Nashville Flight Standards District Office (FSDO). That caused him to be much more involved with general FAA duties versus Corporate Airlines oversight. POI Jones said that it greatly affected the time he could devote to surveillance for Corporate Airlines and more importantly prevented him from observing events at the airline that were critical.

He said that he did not have an overly friendly relationship with Corporate Airlines. He explained that he tried to maintain a very active surveillance of Corporate Airlines because they had a relatively junior pilot force. He said that, at least three days a week, he normally conducted on-site business with Corporate Airlines contacting many different people. Often he conducted business with Director of Training Bob Looney or worked new equipment issues such as the GPS or EGPWS or sat through recurrent ground training. Inspector Jones said he had recently been unable to observe the instructors training on the GPS because he had been unable to get away from the FSDO during a week on telephone duty and was concerned about that omission. He said he performed about ten enroute inspections during the last year, which was more than was required for his work program. He added that he also conducted BA-3100 type rides in conjunction with company check airman PC checks. Captain Looney would conduct about 90% of the oral examination and POI Jones would conduct about 10%. Captain Looney operated the simulator during the PC and POI Jones prescribed the plan of action. He said he also did a considerable number of check airman observations because Corporate Airlines had recently lost experienced check airmen to other airlines.

POI Jones also explained that he spent a lot time administering the Surveillance and Evaluation Program (SEP) for FAA surveillance of Corporate Airlines. He explained that SEP was the program the FAA used to manage Part 121 certificates that were not part of the Air Transportation Oversight System (ATOS). He explained ATOS was the system used for the ten largest carriers. He and Inspector Haynes joined comments to explain that SEP was designed to provide FAA management, and the certification management team (CMT) a process, system and tool by which risk analysis and resolution could be conducted. It enabled the CMT to assess their air carrier's area of

risks, assign severity to the risks and likelihood values, identify shortfalls, then plan a timeline for accomplishment. It provided FAA management the information to provide support and direction to the CMT. Inspector Jones stated it was particularly important because it identified what surveillance was so important that it must be accomplished and funded.

Inspector Jones also noted that his travels had been limited by available FAA funds. He could no longer travel and inspect because the funds just were not there. He said SEP did help him receive funding for the most critical of events.

When asked how SEP fit into the FAA National Work Program, POI Jones said SEP enabled him to target or retarget the direction of his inspections to the areas he felt were most important. He was able to retarget areas of concern rather than conduct national program guidelines (NPG) inspections in areas where there may be no need. He explained that his continual surveillance of the airline had made him very familiar with the people and operations. That surveillance enabled him to get input from people at the airline and to identify areas of need by observation. He added that, in addition to the FAA 8400 Handbook, he had the ATOS systems attribute inspections (SAI) and element performance inspections (EPI) for reference to use in oversight.

POI Jones also said he currently did not get all the support that he used to have from geographic operations inspectors, who were now assigned to ATOS carriers. This had reduced his support from many locations, including STL where the FAA was unable to provide additional support.

When asked if there were any areas the company needed attention, the POI stated that flight crew training and evaluation were his biggest concern. He pointed out that Corporate Airlines did not normally get high time pilots because it was a Part 121 entry-level airline. Furthermore, Corporate Airlines was a victim of their own success in that their senior pilots often moved on to major airlines. Therefore, based upon their pilot experience level, they needed oversight.

Inspector Jones made the following comments in response to the question, “Are there any other areas you think need attention” He said a couple of years ago, he had identified some issues with standardization of cockpit calls. A high turnover rate among the instructors had led to a break in standardization. He explained that had not previously been a problem because the initial cadre of checkairmen at Corporate Airlines had very experienced former American Eagle pilots. He explained those pilots had edited American Eagles manuals to produce Corporate Airlines’ manuals. When those people began departing, a huge amount of experience also departed. POI Jones had worked with Mr. Looney to resolve the issue.

He was asked if there been any areas that Corporate Airlines had been unresponsive. He said about three years ago the FAA had conducted a crew duty time seminar. From that, he had many discussions with Corporate Airlines about their management of crew duty time. Inspector Jones said the biggest problem he faced was that the FAA position on crew duty times was poorly defined. He noted there were so many different legal interpretations of the appropriate federal regulations that it was very difficult to challenge

the air carrier's crew time policies. The problem was compounded by the fact the airline was short of crewmembers and needed the most availability possible from them. He went on to emphasize his point by describing a violation of crew duty time he had identified in which the carrier had scheduled a pilot for eight hours and 2 minutes which was more than the allowed eight hours flying time. When this was pointed out to the carrier, the pilot was rescheduled. He was asked if there was a system in place to catch this type discrepancy and he responded yes, and he was concerned why the system did not catch it. He planned to discuss the scheduling event with the director of operations the next day. He added that he got at least one call a month from pilots concerned about the crew duty days. He felt the crew duty days "fell within" the federal regulations.

He was not aware of any pilots calling in too fatigued to fly. He said a pilot would certainly not be disciplined if he called in too fatigued to fly. In fact, he was aware that many pilots had called in "emotional" that week because of the accident at IRK. He said that while the airline would use the pilots to the maximum extent possible, they were judicious. He said Corporate Airlines' crew problem was because they had only about 53 pilots.

Inspector Jones went on to emphasize his evaluation of the companies' honesty by describing a training omission and the company's self-disclosure of the violation. Corporate Airlines reported a check airman had not been properly qualified, and as a result, all the proficiency checks he had accomplished were invalidated. Those pilots were immediately grounded. That resulted in Corporate Airlines being forced to cancel many flights because some of the affected crewmembers were on trips and at outstations. This stranded passengers, airplanes and crews. It cost Corporate Airlines a tremendous amount of money in lost revenues, lost pilot time resources, and training that had to be accomplished again. Nonetheless, they took the honest route rather than just sweep the problem under the rug.

He said he may have performed enroute surveillance to IRK, but could not recall for sure.

H was asked if there were any callouts for in-flight deviations that were to be made by the NFP. Inspector Jones responded the NFP should call out localizer and glide slope deviations because that was how they were trained, but he could not recall if the callouts were in the flight manual. He explained that any deviations should always be called out by the NFP and believed all the crews were trained this way. He also explained he did not like to require extra calls to be required by the crews. For example, he pointed out that he did not like the "100 Feet Above" call used on the approach. He would prefer to just call "Minimums." Corporate Airlines, however, wanted the "100 Feet Above" call, therefore it was included in their flight manual.

POI Jones said you could leave the MDA only after joining the glide slope or VASI, and you could make a normal descent to the runway. When asked about Corporate Airlines' procedure of descending to MDA, then when the crew saw the approach lights, descending to 100 feet above touch down zone elevation, he said he did not want to see Corporate Airlines pilots descending from the MDA before intercepting the VASI. He was not aware that Corporate Airlines was applying this procedure. He said he had not seen this when observing simulator checks because the weather in the simulator was set

to cause a missed approach or the weather was set so that the crew broke-out on the non-precision approach and could see the runway or VASI.

Inspector Haynes stated Captain Hardee had described seeing a pilot in the simulator descend to 100 above TDZE after hearing the call, "Approach Lights in Sight." That event had been just a few months ago. Inspector Haynes asked if POI Jones had ever seen a pilot descend below the MDA before being on the VASI or glide slope and Inspector Jones replied no.

POI Jones said that he thought an inspector charged with the responsibility of a very active Part 121 air carrier should not have any other certificates assigned. He thought surveillance of Corporate Airlines should be his primary responsibility. He reemphasized that not being able to leave the office for a week at a time when performing phone duty had hurt his ability to conduct surveillance of Corporate Airlines.

He did not think that an EGPWS would have prevented this accident because he did not think EGPWS "tracked" trees.

He stated that Corporate Airlines had an Office Special Inspection Program (OSIP) in 1998 and a Regional Special Inspection Program (RASIP) in 1999. Inspector Jones had been part of the OSIP, which had only minor findings. The RASIP also found only a few items that had been overlooked during the original certification and there were no "showstoppers." There had been no other special inspections because those programs no longer existed.

POI Jones said he believed he had conducted Captain Sasse's type rating ride. He could not recall the specifics of the ride, but remembered Captain Sasse. He recalled Captain Sasse had been very intelligent and had given up a high paying computer job to fly for Corporate Airlines.

POI Jones was asked to explain the FAA Customer Service Initiative (CSI) and FAA internal impacts upon his performance. Inspector Jones explained that there was a lot of turmoil in his office. Based upon an employee attitude survey, Southern Region personnel had been to the office three times. This generated additional anxiety that was very disruptive. In regard to the CSI, POI Jones said it was very frustrating as applied to him. He must be in the office for an entire week handling non- Corporate Airlines questions when "his customer" was Corporate Airlines and the passengers that flew upon them. In light of the IRK accident, he said it was especially troubling. He said the office duty was a serious burden because there was no management assistance to alleviate special circumstances. POI Jones said when he was scheduled for office duty the only way he could get out of it was to find someone who would swap with him for the week.

Inspector Jones said he could not recall performing any of the accident pilots' line checks. He knew for certain he had not met F/O Palmer, because he had not observed any of his training. He said usually he went to meet each class, but did not meet the class that F/O Palmer was in.

POI Jones described comments he had heard while visiting dispatch that day. A pilot had voiced a concern that some people were using the standby position of the ADF to set the flight number instead of the MDA or DH, as was the general practice on the line (this was a technique but was not required). The danger was that a pilot on approach who forgot the MDA or DH might look at that number and think it was his altitude. If it were the flight number instead, it could create a very dangerous situation because what he thought was a safe altitude may now be below ground level. He said it might be mere coincidence, but the flight number for the accident flight was 5966, and the airport elevation was 966 feet.

Interview: Charles D. Brooks, Assistant Chief Pilot, Corporate Airlines
Date: October 26, 2004
Location: Corporate Headquarters, Smyrna TN
Time: 1100 CDT
Group members present: David Tew, Tom Little, NTSB; Harvey Haynes, FAA.

During the interview, Captain Brooks stated the following information:

He was 42 years old. His date-of-hire at Corporate Airlines was June 21, 2000. He had been the assistant chief pilot for about two years.

His total flight time was about 11,000 flight hours. His total PIC flight time on Part 121 carriers was about 1,600 flight hours. His total Jetstream 3201 flight time as PIC was about 1,600 flight hours. He had about 900 flight hours as a F/O on the Jetstream 3201.

From 1982 to 1986 he was an instructor flight engineer (F/E) on C-141 airplanes in the United States Air Force Reserves in Charlestown, South Carolina. From May, 1984 to September, 1986, he worked as an aircraft and powerplant (A/P) mechanic in general aviation. From September, 1986 to October, 1990, he worked as a F/E on B-727 and B-747 airplanes for Evergreen International Airlines. From October, 1990 to June, 1994, he worked as an Air Guard technician at the Tennessee Air National Guard. From June, 1994 to June, 2000, he had worked at Tower Air as Check Airman F/E on the B-747 until the company went out of business.

He performed an EGPWS / GPS special flight qualification for the accident F/O and there were no problems on the flight. He had not performed any enroute inspections or any other observations on the accident pilots. He knew the accident captain professionally from when he flew as a F/O on a flight with him about two years before. Captain Sasse did great on the flight and he did not recall if there was any weather on the flight. Since he has been the assistant chief pilot, there had been no complaints or problems concerning Captain Sasse that he was aware of.

He only knew the accident F/O as an acquaintance since he had only been at Corporate Airlines for about a month and only had about 106 flight hours on the airplane. He was not aware of any negative comments concerning F/O Palmer.

He was not aware of any problems that the accident crewmembers may have had at previous airlines.

He had not personally recommended that any crewmember be released from employment. He had to counsel only one crewmember and that was for a jump-seat etiquette issue not a flying issue. He was not aware of anyone being released from employment by Corporate Airlines because of problems after they were assigned to line flying.

He was asked what were the standard callouts for a deviation from the localizer. He said the NFP should callout any deviations from the stabilized approach criteria, for example, callout if the FP was left or right of the course. Pilots were trained on this procedure and it was in the flight manual and airplane manual.

For a deviation from the glideslope, the NFP should call out the deviation. Pilots were trained on this procedure and it was in the flight manual and airplane manual.

For a deviation below MDA or DH, the NFP should call out, for example, "altitude" and say something like "you are low" when the pilot went below MDA or DH. This procedure was trained but not specifically stated in the flight manual.

Corporate Airlines trained that any deviations should be called out by the NFP. These callouts should be acknowledged by the FP stating, "noted" or "correcting". If a callout was not acknowledged after two challenges, the NFP should suspect incapacitation and take control of the airplane.

On a LOC approach into IRK, from the FAF to MDA, he would normally fly a descent rate of 1,000 FPM to 1,200 FPM. The flight manual profile said use about 1,000 FPM. This was how Corporate pilots were trained in the simulator and in the airplane.

The training department was being proactive at that time and looking at enhancing the training guides in reference to standard calls on precision and non-precision approaches. He felt like the current procedures were adequate, but could possibly be enhanced and the company was looking at possible improvements.

There was a St. Louis, Missouri base and a Nashville, Tennessee base. The Nashville crews did fly some flights out of St. Louis. Both accident pilots were based in Saint Louis, Missouri.

Takeoff and landing speeds were determined from speed cards.

The NFP would gather the weather for an approach and determine what approach to expect. The FP would ask the NFP to set the approach up. The FP would then give control of the airplane to the NFP and brief the approach and the speeds. There were two set of Jeppesen manuals in the airplane.

The company distributed changes to manuals in the pilot mail boxes. A pilot's manuals were checked during recurrent training for currency. The company used email from the SABRE system to keep pilots informed. Corporate Airlines did not use a read file.

He was involved in the IOE process. He usually scheduled a pilot for an entire flight sequence during IOE, The hours required for IOE could be reduced up to 50% by the number of landings. IOE could be 10 landings and 10 hours. He liked to give pilots most of the IOE hours to give them experience.

There was a Safety Report Form that pilots could use to report any safety concern to the Director of Safety. He was aware of some Safety Report Forms turned in. There were some for a bird strike or deer strike on runway. He did not recall any serious safety concerns that were reported on the Safety Report Form.

He said he would like to see movable bugs on the altimeter for use as a reference of important altitudes. He indicated that the company was pursuing this option at that time.

He was "as or more impressed" with the safety at Corporate Airlines than he was with his previous two Part 121 carriers.

Trans States Airlines was responsible for loading the passengers and bags on the airplane.

Interview: Hal Cutler, FAA APOI for Corporate Airlines
Date: October 28, 2004
Location: Telephone interview
Time: 1100
Group members present: David Tew, NTSB; Harvey Haynes, FAA, Charlie Brooks, Corporate Airlines.

During the interview, Inspector Cutler stated the following information:

He was fifty-three years old. His flight experience included approximately 14,000 hours total time—primarily in any type of Army helicopter gunship. He had about 12,000 hours as pilot in command (PIC), none of which was in Part 121 operations. He had flown scheduled 135 operations for Prime Air based in Clarksville, Tennessee about 1985.

He had worked for the FAA for five years and had always worked at the Nashville Flight Standards District Office (FSDO). He was currently assigned to the Corporate Airlines certificate as the Assistant POI (APOI). He also served as APOI for Red Apple Aviation, which held a Part 125 certificate.

Inspector Cutler said he had not known Captain Sasse well. Inspector Cutler explained he had only been on the Corporate Airlines certificate management team for one year, and had experienced a heart attack in October 2003, which kept him out of the office until January 2004. In late January he had completed the type rating for the British Aerospace (BA) BA-3100. Inspector Cutler stated while he had met Captain Sasse in the

crew room at STL, he could not recall ever observing him as a pilot. He could not recall ever hearing any comments about the captain's flying ability.

Inspector Cutler could not recall ever having met F/O Palmer. He explained that while he tried to observe new hire training, he had missed a few classes; therefore had not met the F/O. Inspector Cutler said that he normally conducted surveillance of Corporate Airlines indoctrination classes, systems instruction, and especially simulator training. He had not observed all the classes. He said that Corporate Airlines conducted pilot proficiency checks, but the FAA was required to be present for all BA-3100 type rating checks. Since F/Os did not take type rating checks, he had not observed F/O Palmer's proficiency check.

Inspector Cutler said he and Inspector Jones frequently observed simulator training, which Corporate Airlines treated very realistically. He said Corporate Airlines trained all their procedures in the simulator as if they were actual conditions. He said that during March-April, 2004 he had performed surveillance during six to eight simulator sessions for captain upgrades. Of those upgrade pilots, he remembered a couple who failed their checks, but could not recall the specific names. He said that in addition to observing training, he and Inspector Jones also conducted 80-90 station inspections throughout the year. He said that because of his heart attack and SEP program activity he had been unable to accomplish as many inspections as he would have preferred.

When asked what he thought of SEP and did it work, he stated that if the FAA were going to use Air Transportation Oversight System (ATOS), then we should use ATOS—not part of the system for some things and not for others.

He was asked how the accident approach should have been flown per Corporate Airlines approved procedures if the flight had been cleared to 2500 feet mean sea level (MSL) and cleared for the approach by ATC. Inspector Cutler said he would expect the FP and NFP to do their duties with the NFP constantly monitoring the FP's performance. He said, for example, if the aircraft were descending from 3,500 to 2,500 feet he would expect the NFP to call "1000 feet to go" and "100 feet to go." If they were in instrument conditions he would expect to hear the NFP call "100 feet to go" and "Minimums" as appropriate at MDA. At the final approach fix (FAF) Inspector Cutler expected the NFP to state "Kemmy, descend to MDA 1320."

When asked how he would expect to see the crew descend from Kemmy, Inspector Cutler replied Corporate Airlines used three types of descent rates which they defined as part of a stabilized approach: (1) down to 1000 above ground level (AGL) a crew could descend at up to a maximum rate of 2000 feet per minute (FPM); (2) from 1000-300 AGL a crew could descend at 1200 FPM; and (3) from 300-50 AGL they could descend at a maximum of 300-50 FPM. Inspector Cutler said in the situation of the accident approach, the crew could have descended to the MDA at maximum of 1200 FPM because of the 350 foot AGL MDA. In addition, he said the NFP would call "100 feet above," then "Minimums" in relation to the MDA.

When asked if the FP had to respond to any of the calls announced by the NFP, Inspector Cutler said no. Inspector Cutler said on the accident flight, the captain was the FP and by

the procedures in the aircraft manual, his instrument scan should be inside the airplane, not outside. When asked if the FP should look outside the airplane, he said "he's the captain; he's responsible, if he wants to look out—that's his prerogative, but it was not in the written procedures". He said his opinion was that if he was the captain he would "throw a glance outside." When asked if the aircraft manual said the captain could "not" look out during the approach. Inspector Cutler said he could not recall.

When asked if the crew were required to maintain the MDA once it was reached, he said Part 91 required them to maintain the MDA until additional information was obtained.

When asked what he would say if he knew the FP was the first to call the approach lights, Inspector Cutler responded that he would say they were not following their own procedures. He stated the NFP was supposed to call the approach lights in sight, because the FP was to be on the gauges flying the aircraft.

When asked if they were required to follow the Visual Approach Slope Indicator (VASI), Inspector Cutler said all the simulator approaches had a VASI and he had seen crews follow them. When asked if that meant they must stay at the MDA, he said "no" when you are at MDA and you see the approach lights, you could go down to 100 feet above the touchdown zone elevation (TDZE) until you joined the VASI then continue down the VASI to land.

He was asked about a procedure in the flight manual which said that the crew must remain at or above the VASI. He was asked if that did not mean the crew must stay at the MDA until it joined the VASI and he responded "no" the crew could descend to 100 feet above TDZE once the approach lights were visible. They could then join the VASI from that altitude or land before the VASI if they were in a position to do so. He said a properly trained instrument pilot would know what that meant.

When asked could the crew descend if they were several miles from the airport when they saw the approach lights, Inspector Cutler replied that when they were at MDA and saw the approach lights they could descend to TDZE plus 100 feet. He said that at that point the aircraft could be skimming across the tops of the trees.

Inspector Cutler stated that the callouts he would expect to hear by the pilots from the MDA to the 100 feet above TDZE level off, were the callouts that were in the aircraft manual. During the descent, the NFP would callout "100 Feet Above" and "Minimums". At the MDA, when the NFP called "Approach Lights In Sight, Continue" the FP would descend to 100 foot above TDZE. In the event the runway was seen visually, the NFP would call "Runway in Sight." The FP would respond with "Going Visual, Leaving Minimums, Flaps 35." If the runway was never seen visually, the NFP should callout "Missed Approach." Inspector Cutler said those procedures and callouts that he described were precisely what he had observed in the simulator.

He said if the FP deviated from a company procedure, he would expect to hear the NFP announce the deviation, and the FP should respond with "Noted" or "Correcting." He stated those were regular calls for an approach.

He was asked what callouts generated by the Ground Proximity Warning System (GPWS) would he expect to hear. Inspector Cutler stated that you might hear "bank angle" with excessive banking. He said the GPWS could also generate callouts of "Minimums" and "Too Low Flaps." He was asked how the crew should respond. He said the FP should respond to the GPWS announcement by stating "Correcting" and simultaneously move the aircraft controls to correct or arrest the deviation. He stated that procedure was in the manual and he had observed it in the simulator.

He had heard some Corporate Airlines pilots complain about being tired. The FAA regulations allowed long days. He said he had not heard of any pilot say they were too fatigued to fly. He replied that he had known of pilots calling in sick, but was not aware of anyone every calling in too fatigued to fly. He said he did not think the company would ever force a pilot to fly fatigued or sick.

He was asked what or how Corporate Airlines taught Crew Resource Management training He said that Corporate Airlines had a two hour block of training that specifically involved CRM training. Inspector Cutler said that Corporate Airlines had standard call outs and were standardized in training.

He was asked if he thought the crewmembers would speak up if they felt something was wrong. He stated that the two pilots involved in the accident were not low time pilots, he said they were both experienced pilots even though the accident F/O was new to Corporate Airlines and the Jetstream airplane. He said they would certainly speak up if something was wrong. He had seen good CRM among the crews he observed and said CRM was ingrained into the pilots during training. He had observed that if one pilot forgot something the other crewmember would prompt him. Inspector Cutler said it was his opinion that Corporate Airlines CRM was "solid."

He said Corporate Airlines crews always complied with sterile cockpit procedures in his presence, but he could not say how they might act without an FAA Inspector in the cockpit. He said that he believed the company stressed compliance with procedures and regulations, therefore he expected the crews would be just as observant without him being present.

He was asked to please advise the NTSB if the Nashville FSDO made any recommendations for improvement or changes to procedures based upon this accident. Inspector Cutler said his office felt Corporate Airlines had operated safely and completely within the guidelines of the federal regulations. He said if they had been doing anything dangerous, his office would have made changes.

He was asked if he was aware of an incident at IRK on the night before the accident when a Corporate Airlines crew had to climb to avoid colliding with a tree using the same approach procedures as the accident crew. He said he was not aware of that and felt he should have been advised. He said he stood by his evaluation that Corporate Airlines was flying safely and in accordance with the FARs.

Inspector Haynes described the accident flight's approach and asked about the crew descending to an altitude of 1,064 feet which was the airport TDZE plus 100 feet.

Inspector Haynes stated that the Jeppesen chart for the airport showed a tree rising to an altitude of 1027 feet, which resulted in a theoretical separation between tree and an airborne airplane of only 37 feet. Inspector Cutler said there was nothing wrong with that as it was allowed by FAR part 91. Inspector Haynes stated both crewmembers altimeters could legally have an error up to 75 feet, and said that could put the airplane into the ground if they were descending to 100 feet above the TDZE. Inspector Cutler was asked did he still approve of a descent to TDZE plus 100 feet procedure knowing that information. Inspector Cutler stated that the descent to 100 feet above the TDZE was allowed by the FARs.

He was asked what altitude clearance the Terminal Instrument Procedures (TERPS) provided for the crews as they descended below the MDA and proceeded to the TDZE plus 100 feet altitude. Inspector Cutler said the protection afforded was defined in FAA Order 7110.

He was asked why a VASI would be necessary if it was always possible to just descend to the TDZE plus 100 foot altitude. Inspector Cutler replied that was covered by TERPS.

He was asked how the crew would be protected from obstacles on the approach course and during landing. Inspector Cutler replied that was covered by TERPS.

Interview: Captain Bob Looney
Date: November 16, 2004
Location: Phone interview
Time: 0945

Operations Group member present was: David Tew, NTSB.

During the interview, Captain Looney stated the following information:

The flight manual stated the flying pilot (FP) had the "sole responsibility to fly the airplane". During an approach, pilots were trained that the FP should be concentrating on his flight instruments during the approach and the NFP was responsible for looking outside the airplane to see visual cues. If the NFP called the "approach lights in sight", the FP pilot should still be monitoring his instruments because "approach lights in sight" was not enough information to be able to make a "good decision" on descending. If he saw a FP looking up before the NFP pilot had called the "runway in sight", he would "thump" him in the back of his head as a reminder to "fly the airplane". If the FP pilot was the first to call the "approach lights in sight", he would "thump" him in the back of his head because that meant he was not performing as he was trained.

On a non precision approach, when a pilot reached the minimum descent altitude (MDA) on the approach, he should "level" the airplane and maintain the MDA until the non-flying pilot (NFP)called the approach lights or the runway "in sight".

Corporate Airlines trained pilots that they "must stay" at MDA until they reached a point where a normal descent rate would take them to a landing on the runway. Pilots could

determine that point using a VASI, a Precision Approach Path Indicator (PAPI), or compute a visual descent point (VDP) using DME information, or use computed timing based on airplane speed, winds, distance to airport, etc. Page 41 of the flight manual gave guidance on determining a point to begin a descent. If the FP did descend below the MDA after the NFP had called out the "approach lights in sight", there was no call-out required from the crew. Once the FP did start a descent below the MDA, the rate of descent should normally be a standard rate of descent or about 600-650 feet per minute descent. The airspeed should be about 130 knots during the descent.

The FP could descend to as low as 100 feet above the runway touchdown zone elevation (TDZE) with only the approach lights in sight. To descend below 100 feet above the TDZE, the crew would have to have visual references for the intended runway in sight. These visual references were defined in the FAA regulations. When the NFP had sufficient visual references to identify the intended runway and called "runway in sight", the FP should call out "leaving minimums – flaps 35".

The simulator could be set up to allow the pilots to only see the approach lights initially when on an approach. In the simulator, the pilots would normally begin to see the approach lights about 1 ½ - 2 miles from the end of the runway.

Interview: Christopher David Hardee, full-time training instructor and PC check airman.
Date: January 19, 2005
Location: Phone interview
Time: 1030

Operations Group member present was David Tew.

During the interview, Captain Hardee stated the following information:

Corporate Airlines did not perform "monitored approaches".

There were three sources of distance measuring information available in the cockpit. The two primary navigation receivers and a standby receiver were all capable of providing distance from a selected source.

There was no "official policy" to use the "distance times three" procedure described in the flight manual as guidance to determine whether the airplane was at a suitable altitude. It was in the manual and was mentioned during training, but was not trained during simulator training.

There was no " official procedure" to set the MDA altitude in the standby portion of the automatic direction finder (ADF) as a reminder during an approach, however some pilots did. Pilots were trained to set the MDA altitude on the "bug" in the radio altimeter as a reminder during an approach.

The NFP was required to call out "100 feet above minimums" when the airplane was at that altitude. The NFP was trained to make this callout based on altitude information

from the barometric altimeter. There were no altitude "bugs" on the barometric altimeter that could be set as an altitude reminder.

The GPWS system on the airplane annunciated when the airplane reached MDA or minimums using altitude information from the radio altimeter.

Vertical speed guidance from the flight director could be obtained by depressing the VS [vertical speed] button on the mode selector. When VS was selected, if the pilot then pushed in the true course steering (TCS) button, the flight director pitch command bars would give guidance to maintain the vertical speed of the airplane at the time the TCS button was pushed.

During training, it was "drilled into" pilots that they had to select a vertical guidance mode on the mode selector prior to selecting a horizontal guidance mode. If a horizontal mode was selected first, the pitch command bar would also appear but would not give any vertical guidance until a vertical mode was selected. This could be misleading and a pilot could forget to select a vertical mode. Corporate Airlines pilots were taught to engage the "right side" first [vertical guidance] then the "left side" [horizontal guidance] on the mode selector. The FP should call for any changes to the flight director and the NFP should make the changes.

The company "encouraged" the use of the flight director. Some pilots used the flight director a lot and some used it very little. He said he personally used the flight director at least every other approach that he flew to maintain competency in its use. Use of the flight director during a non-precision approach was the option of the pilot. During a proficiency check, pilots were required to perform at least an instrument landing system (ILS) approach using the flight director.

The company did not use any CFIT checklist. The company had CFIT training which consisted of a video and a test that was handed out.