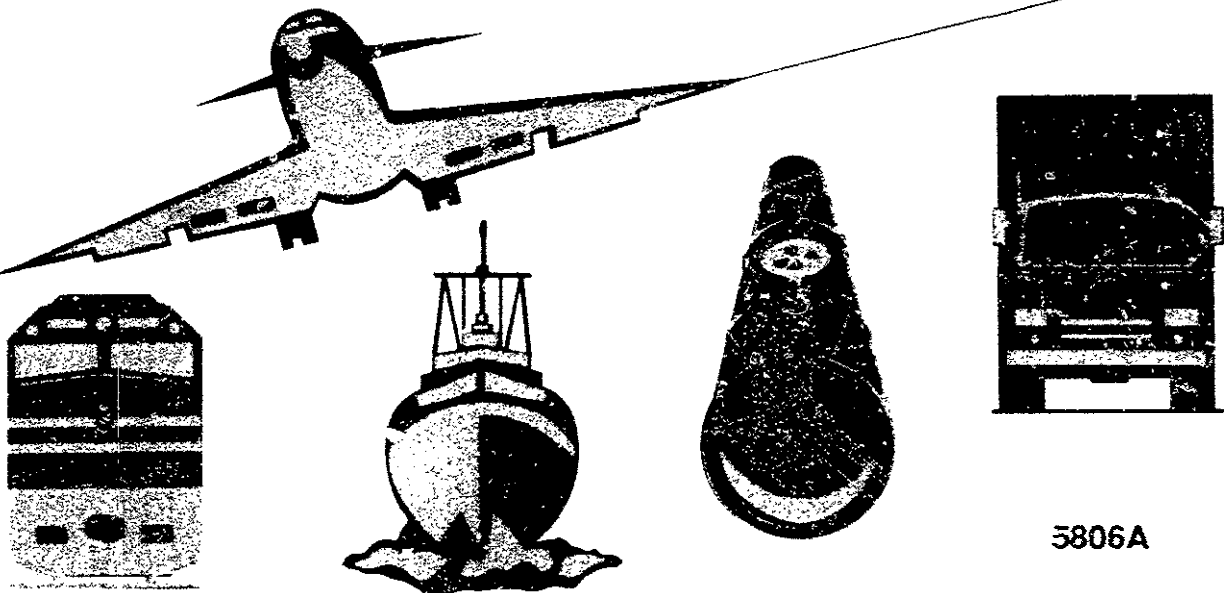


NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

AIRCRAFT ACCIDENT REPORT

CONTROLLED COLLISION WITH TERRAIN
GP EXPRESS AIRLINES, INC., FLIGHT 861
A BEECHCRAFT 699, N118GP
ANNISTON, ALABAMA
JUNE 8, 1992



3806A

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**Adopted: March 2, 1993
Notation 5806A**

Abstract: This report explains the controlled collision into terrain of GP Express flight 861, a Beechcraft C99, N118GP, in Amiston, Alabama, on June 8, 1992. The safety issues discussed in the report are, for aircraft operating under 14 CFR Part 135, the importance of adequate preparation and experience of newly hired captains, available approach charts for each pilot, and adherence to specific **stabilized** approach criteria. The importance of adequate cockpit resource management is also discussed. Recommendations concerning these issues were made to the Federal Aviation Administration.

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EXECUTIVE SUMMARY

On June 8, 1992, GP Express Airlines, Inc., flight 861, a Beechcraft model C99, N118GP, crashed while maneuvering to land at the Anniston Metropolitan Airport, Anniston, Alabama. The flight was a scheduled passenger flight from the William B. Hartsfield Atlanta International Airport in Atlanta, Georgia, on an instrument flight rules flight plan to Anniston, Alabama.

The captain and two passengers received fatal injuries. The first officer and two passengers were seriously injured. The airplane was destroyed by impact and postcrash fire.

The investigation revealed that the flightcrew was properly certificated and qualified in accordance with applicable Federal Aviation Regulations (FARs) and company requirements, and that there was no evidence of adverse medical conditions that affected the flightcrew, nor were they under the influence of, or impaired by, drugs or alcohol. The investigation determined that the airplane had been properly maintained and that there was no evidence of a malfunction or preexisting problem that would have either caused or contributed to the accident. Additionally, it was determined that weather was not a factor in the accident.

The Safety Board determined that the flightcrew experienced a loss of situational awareness that led to a controlled collision with terrain. After being cleared by air traffic control for the instrument landing system (ILS) approach to runway 5 at Anniston, the flightcrew turned the airplane toward the north away from the airport in the erroneous belief that the airplane was south of the airport. The flightcrew did not perform the maneuvers specified on the approach chart, which required flying outbound from the airport, then performing the "procedure turn" back toward the airport. The investigation determined that in actuality, the airplane had intercepted the back course localizer signal for the ILS approach, and the flightcrew had commenced the approach at a high airspeed about 2,000 feet above the specified altitude for crossing the final approach fix. The airplane continued a controlled descent until it impacted terrain.

The National Transportation Safety Board determines that the probable causes of this accident were the failure of senior management of GP Express to provide adequate training and operational support for the startup of the southern operation, which resulted in the assignment of an inadequately prepared captain with a relatively inexperienced first officer in revenue passenger service, and the failure

of the flightcrew **to** use approved instrument flight procedures, which resulted in a **loss** of situational awareness and terrain clearance. Contributing to the causes of the accident was GP Express' **failure** to provide approach charts to each pilot and to establish stabilized approach criteria. *Also* contributing were the inadequate crew coordination **and** a role **reversal** on the part of the captain and first officer.

As a result of its investigation of this accident, the Safety Board made five recommendations to the Federal Aviation Administration (**FAA**): to **require** the availability of two sets **of** approach charts on aircraft requiring two pilots, to require the development and use of stabilized approach criteria, to develop evaluation criteria for cockpit resource management (**CRM**) training programs, captain flight training, and a minimum experience requirement for commuter air carrier captains. Additionally, the Safety Board reiterated **a** recommendation to the FAA to require that scheduled **14** CFR Part 135 operators develop and use **CRM** training programs and **a** recommendation to establish minimum experience levels for pairing flightcrews.

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1. FACTUAL INFORMATION

1.1 History of the Flight

On June 8, 1992, GP Express Airlines, Inc., flight 861, a Beechcraft **model** C99, N118GP, crashed while maneuvering to land at the Anniston Metropolitan Airport, Anniston, Alabama. The accident occurred about 0852 central daylight time. The flight was a scheduled passenger flight from Atlanta, Georgia, **to** Anniston, Alabama, operating under the provisions of Title 14 Code of Federal Regulations (CFR) Part 135. The flight was operated in accordance with an instrument flight rules (IFR) flight plan, as required by the airline's procedures. The captain and two passengers received fatal injuries. The first officer and two passengers were seriously injured. The airplane was destroyed by impact and postcrash fire.

The crew of flight 861 reported for duty on June 8, 1992, about 0400 at the GP Express operation facility at the Tuscaloosa Municipal Airport in Tuscaloosa, Alabama. They were scheduled to fly **GP** Express flights 860 and 861. The flights were to be **from** Tuscaloosa **to** Atlanta, Georgia, and return, with intermediate stops in Anniston, Alabama.

Flight 860 departed Tuscaloosa at 0515. The two GP Express station agents at Tuscaloosa reported that the captain and first officer were in good spirits, and that the passenger loading and the departure were routine. The flightcrew reported no problems with the airplane prior to departure. The flightcrew made a visual approach to Anniston, and flight 860 arrived on schedule at 0555. The GP Express station manager at Anniston reported that the first officer informed him that the **return** flight **from** Atlanta **to** Anniston, flight 861, might be late because of possible problems with the airplane, but the first officer did not elaborate on the

possible aircraft problems. However, during the Safety Board's public hearing for this accident, the first officer reported that the only problem with the airplane was considerable noise on the intercom system, which made it difficult for the pilots to communicate with each other. Flight **860** departed the passenger gate at Anniston at **0600** and arrived in Atlanta at **0645**.

In Atlanta, **469** pounds of fuel were added to the airplane, for a total outbound fuel load of **1,500** pounds, and the flightcrew received the weather information for the return flight segment. **Four** passengers boarded flight **861** and six bags were loaded in the airplane's baggage pod. Flight **861** departed the passenger gate at Atlanta on schedule, at **0755**, and was scheduled to arrive in Anniston at **0845**. However, as a result of air traffic control (ATC) ground hold procedures, the takeoff was delayed until about **0822**. Ground personnel at Atlanta and the ATC controllers who talked to the flightcrew by radio reported that the crew seemed in good spirits and was congenial. The flightcrew did not report any difficulties with the airplane to the airline or ATC personnel while on the ground at Atlanta or en route to Anniston.

After takeoff, flight **861** received radar vectors from the controllers toward the Anniston area. However, the vectors did not provide the navigational fix to which the controller was directing the flight. Flight **861** was provided a cruise altitude of **6,000** feet. The cockpit voice recorder (CVR) conversations indicate that during the flight, the crew had difficulty understanding each other's remarks and instructions because of the noise on the intercom system. Additional conversations indicated that the first officer had noted some undefined problems with the airplane's autofeather system and the battery, and that he had had difficulty in setting the radio frequencies. (Appendix **B** contains the transcript of the **CVR**).

About **0841**, the Atlanta Air Route Traffic Control Center (Atlanta Center) controller cleared flight **861** to "descend pilot's discretion, maintain five thousand." The first officer acknowledged the transmission and stated that the flight was descending to **5,000** feet. The captain then remarked, "does he want **us** to **resume** own navigation?" The first officer did not reply to the captain's question. The captain then stated, "I heard him say that. As **far** as I'm concerned I'm still on vectors two eight zero." The first officer replied, "yeah two eight zero's fine. Because we're on course anyway so let's just hold it." The captain responded, "yeah, but we're slowly drifting off." This comment resulted in a short dialogue between the crew as to whether the airplane was on course. This conversation the captain asking, "what's the course?" To which the first officer replied, "zero eight **five** inbound." The conversation concluded at **0842:39**, with the captain's statement

"then we're way off course." In fact, **085°** was the outbound course from the Talladega VOR eastward on the Victor airway. The course inbound to Talladega was the reciprocal of **085°**, or **265°**.

At **084244**, the Atlanta Center controller informed flight 861 that radar service was terminated and to contact Birmingham Approach Control. The first officer acknowledged the instructions and contacted the Birmingham Approach Control at **0843:19**. During the public hearing, the first officer testified that he believed that flight **861** had been receiving radar vectors from ATC. At **0843:42**, the Birmingham approach controller instructed flight 861 to descend and maintain 4,000 feet and continue direct to the Talladega VOR¹ with a possible visual approach to Anniston airport if the flightcrew was able to see the airport. If the flightcrew was unable to see the airport, they should expect the instrument landing system (ILS)² approach to runway 5 from over the approach fix, "BOGGA." (Figure 1 is a copy of the ILS runway 5 approach to Anniston airport.) At 0844:13, the first officer responded, "possible visual and ah if we don't see it we'll let you know for the ILS." At **0847:32**, the captain asked the first officer, "...you've got everything set up that you can except the localizer frequency right?"

At **0847:46**, the approach controller informed the flightcrew of the latest weather for Anniston: the ceiling at the airport was 1,500 feet, the visibility was 3 miles in fog and haze, and the 700 foot layer of clouds was scattered variable to broken and appeared to be breaking up. The first officer acknowledged the transmission at **0848:05**. At **0848:10**, the first officer asked the captain, "you want to go around for the ILS?" About the same time, the controller notified flight 861 to "proceed direct BOGGA maintain four thousand 'til BOGGA cleared localizer runway ILS runway five approach."

The captain then requested that the first officer contact the controller to inquire about flight **861's** distance from BOGGA. Rather than contact the controller, the first officer mentally computed the distance as being 5 miles. At **0848:49**, the first officer stated, "didn't realize that you're going to get this much on

¹Very high frequency omni-directional range (VOR) electronic navigation aid used as the basis for navigation in the National Airspace System.

²An instrument landing system (ILS) is designed to provide an approach path of exact lateral and vertical alignment of an aircraft with the runway. The system consists of a localizer signal that provides lateral guidance, a glideslope signal that provides vertical guidance, marker beacons that provide range information, and approach lights to the runway threshold.

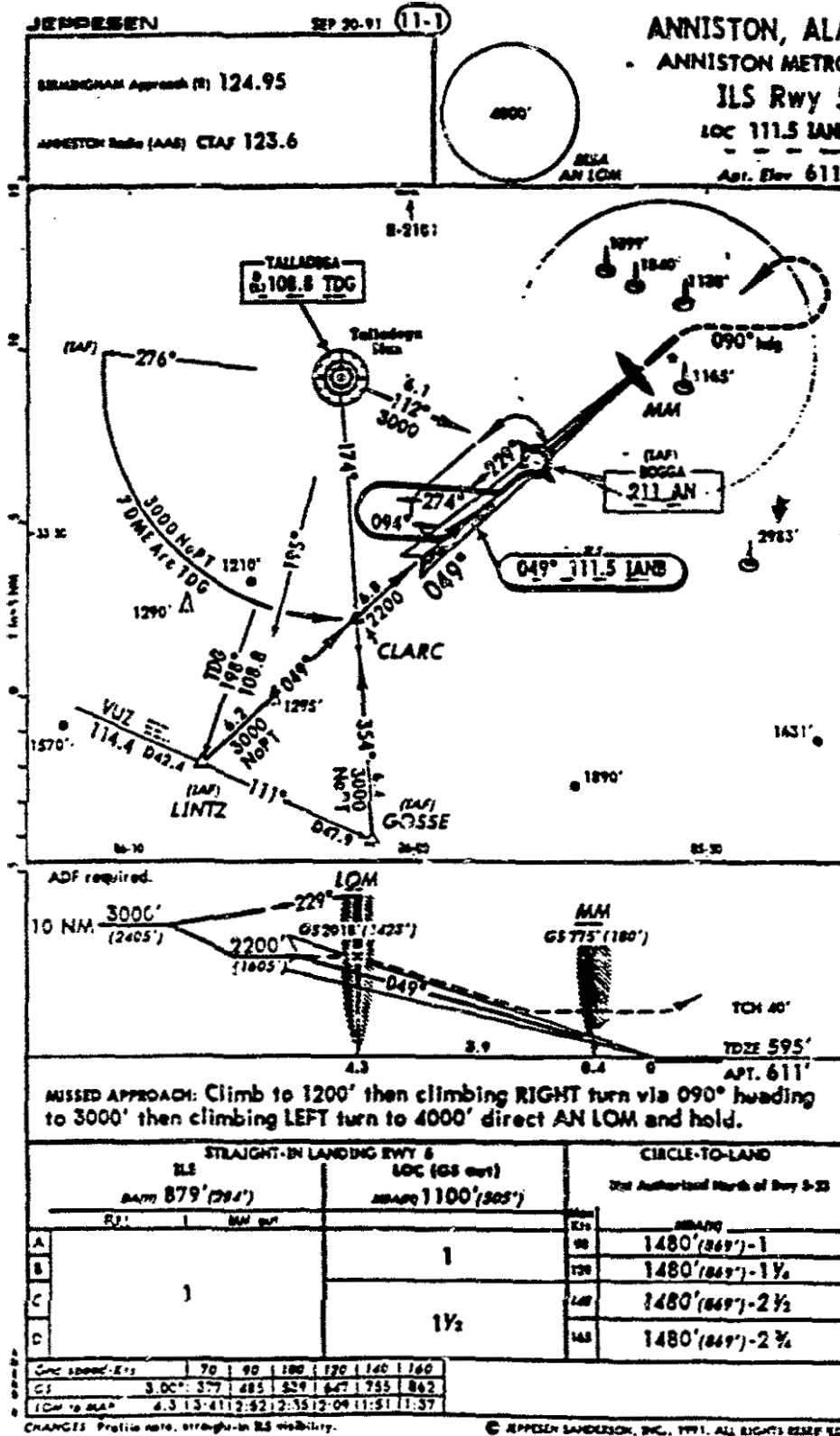


Figure 1.--ILS Runway 5 Approach, Anniston, Alabama.
 (Reproduced with permission of Jeppesen Sanderson, Inc.)

your first day did ya" At 0849:02, the captain asked, "got the localizer in?" To which the first officer replied, "workin' on it." At 0849:20, the first officer stated, "there you go." The captain replied, "yup went right through it." The first officer then inquired, "can you go around for it?"

At 0849:26, the captain stated, "I **thii** we're right over the outer-." The first officer interjected, "we're right over BOGGA. He kept us in real **tight**...we're **four** and a half out. .go ahead and drop your gear, speed checks."

At 0849:43, the captain stated that the "glideslope isn't even alive. What's the minimum altitude I can descend to 'til I'm established?" The first officer responded, "'til established. Twenty two hundred."³

At 0850:06, the approach controller informed the flightcrew that the weather south of **BOGGA** was moving northbound and that the leading edge of the weather was about **2** miles southwest of BOGGA. At 0850:18, the first officer acknowledged the transmission and reported, "we're out of four thousand **for** the localizer at this time and we're inside **of** BOGGA." The controller replied, "yes sir and advise procedure turn inbound." At 0850:28, the first officer stated, "**ah** procedure **turn** inbound complete."

At 0850:53, the captain stated, "ah we gotta go missed on this." The first officer replied, "just a minute--there you go--there you gonna' shoot right through it again--there you **go** see." At 0851:12, the first officer stated, "okay we gettin' in close keep 'er goin'," followed by, "you're okay." The captain responded, "hopin' no one on here's a pilot."

At 0851:30, the first officer stated, "through twenty two..." The captain responded, "okay we're on our way" then, "there's the glideslope." The first **officer** replied, "we can continue **our** descent on down. We're way **high**." The captain then stated, "okay is the glideslope working?" The first officer replied, "nope **I'm** not getting any... so with **no** glideslope, we're down to eleven hundred." The captain then asked the first officer to confirm that the proper radio frequency for the ILS had been selected. The first **officer** confirmed that the proper frequency had been selected.

³During the public hearing, the chief pilot and the director of operations for GP Express stated that only one set of approach charts was kept in each airplane. Normally, the flying pilot would review the approach charts and then give the approach plate back to the nonflying pilot. The nonflying pilot would then read aloud the pertinent elements of the approach and then place the approach charts on the center console. The director of operations stated that several captains had purchased and used their own set of approach charts.

At 0852:13, the captain asked, "what's our missed approach point now?" The first officer responded that **missed** approach would be at the middle marker at an altitude of 1,200 feet.⁴ At 0852:24, the first officer stated, "coming up." The sound of impact was recorded on the CVR at 0852:25. There were no witnesses to the **crash**.

The accident occurred **during** the hours of daylight, at 33°40' north latitude and 85°44' west longitude. The accident site was at **an** elevation of about 1800 feet mean sea level (msl); and it **was** located about 75 miles northeast **of** the Anniston airport. At **the** time of the accident, the area near the accident site was enveloped in fog and low-lying clouds. The cloud ceiling **at** Anniston airport was reported to be 1,500 feet.

1.2 Injuries to Persons

<u>Injuries</u>	<u>Crew</u>	<u>Passengers</u>	<u>Others</u>	<u>Total</u>
Fatal	1	2	0	3
Serious	1	2	0	3
Minor	0	0	0	0
None	0	0	0	0
Total	2	4	0	6

1.3 Damage to Aircraft

The airplane was destroyed by impact and postcrash **fire**. The value **of** the airplane was estimated at \$1.3 million.

1.4 Other Damage

Only trees **and** vegetation in the area of the crash were destroyed by **the** impact and the postcrash **f i** .

⁴The decision height **for the** Anniston **runway 5** ILS is 879 feet with the glideslope operational. If **the glideslope** is not operational, the minimum **descent** altitude is 1,100 feet. **The captain** was required **by** Federal Aviation Administration (FAA) regulations **to add 100 feet to these minimums** until he acquired 100 hours experience as captain.

1.5 Personnel Information

The captain and first officer were properly certificated in accordance with existing Federal Aviation Regulations (FARs). The investigation revealed that the pilots were in good health.

The captain, age 29, had been hired by GP Express on May 31, 1992, to attend ground and flight training and then to begin flying as a captain on the company's Beech C99 airplanes. He held an airline transport pilot (ATP) certificate with ratings and limitations for airplane multiengine land, commercial pilot privileges for airplane single-engine land, for rotorcraft helicopter, and an instrument rating for helicopters. He also possessed a flight instructor certificate with ratings and limitations for airplane single- and multiengine instrument airplane, and a ground instructor certificate with the ratings of advanced and instrument. A type rating was not required for the Beech C99. His first-class airman medical certificate was issued on May 6, 1992, with no limitations. He indicated on his medical application that his total civilian pilot time was about 850 hours.

The captain received his commercial pilot certificate for airplane single- and multiengine land with an instrument rating and his flight instructor airplane certificate through the University of Dubuque's aviation program. He began his professional aeronautical experience in June 1986 with the U.S. Army, where he received helicopter training and ultimately instructed in the UH-60, a twin-engine turbine-powered helicopter. When he was discharged from the Army in September 1998, he had attained the rank of Captain and had accrued 1,611 flight hours in helicopters, including 23 hours actual instruments and 211 hours in a simulator. Upon being released from active duty, he entered the Army reserve to maintain his rotary wing flying skills.

From September 1991 to May 1992, the captain was self-employed as a general aviation flight instructor near Enterprise, Alabama. During this period, he provided flight instruction in reciprocating-powered airplanes such as the Cessna 172, the Piper PA-23, PA-44, and the Beech 76 airplanes. While employed as a flight instructor, the captain had flown once to the Anniston airport.

In January 1992, the captain completed the evaluation portion of Right Safety International's (FSI) Airline Training Program. The 2-day program, paid for by the captain, included an examination of his instrument and multiengine knowledge; an evaluation of his piloting skills, including IFR procedures using a motion based simulator, and a background check. After successfully completing the

evaluation program, the captain's name was placed on FSI's list of qualified candidates awaiting airline interviews.

On April 20, 1992, the captain was interviewed by the director of operations, the chief pilot of the southern operations, and the chief pilot for GP Express Airlines. GP Express' director of operations stated that normally the airline hired pilots only as first officers with the prospect for upgrading to captain. However, because of his experience, and the immediate needs of the company, the captain of flight 861 was offered the position of captain in a GP Express Beech C99, which he accepted. This offer was subject to the successful completion of training, for which the captain was required to pay.

On May 16, 1992, the captain completed the GP Express employment application. He stated on the form that he had no fixed-wing turboprop or jet experience. He also provided that he had accumulated a total of 701 hours in reciprocating-engine airplanes, of which 370 hours were in multiengine airplanes and 40 hours were logged as instrument time. As an instructor, he had logged a total of 450 hours, of which 370 were in multiengine airplanes. Additionally, he had logged 0 hours instructing on instrument flight.

The captain's personal flight log contained only his civilian flight experience. The last dated entry was May 29, 1992, which was followed by undated entries for his initial operating experience (IOE) with GP Express. The logbook indicated that the captain had accrued a total of 857.2 hours of flight time, of which 701.7 hours were as pilot-in-command and 38.2 hours were actual instrument time. The logbook further indicated that he had 76 hours of instrument time while using a view-restricting device, 391.3 hours in a reciprocating-powered fixed-wing multiengine airplane, and 17.6 hours in a turbine-powered fixed-wing multiengine airplane. From May 22, 1992, through May 27, 1992, the captain's logbook indicated that he received 11.1 hours of flight training in the C99, including 22 instrument approaches.

GP Express records indicate that the captain had completed 48 hours of initial C99 airplane ground training as of May 21, 1992. The records substantiate 11.1 hours of C99 flight training. Ground and flight training were administered by an instructor employed by FSI on contract to GP Express. The record of ground training did not contain a block on the use and operation of airborne radar. However, the chief pilot for the airline stated at the public hearing that handouts and video training material on the use of weather radar systems are available during ground training. The instructor stated that the training was in accordance with the

Federal Aviation Administration (FAA) approved GP Express training program. All of the flight training was conducted in the airplane with the instrument portions accomplished using a view-restricting device. All of the flights were confined to the airline's midwest route structure. The chief pilot reported at the public hearing that the instrument training included ILS approaches in nonradar controlled environments.

On May 29, 1992, the captain completed a 14 CFR Part 135 Airman Competency/Proficiency Check in the C99. The check lasted 1.7 hours and was administered by the GP Express chief pilot, who was an FAA-designated check airman. The flight training and flight check records indicated that the maneuvers performed by the captain included VOR nonprecision instrument approaches and ILS approaches.

The captain acquired his IOE in the C99 on June 1 and June 3, 1992, which consisted of 12.8 hours of flight time and 17 landings. These flights were conducted on GP Express' midwest route structure, with portions of flights and several approaches accomplished in actual instrument weather conditions.

The flight schedule called for the captain's initial revenue passenger flight to take place on June 9, 1992, with the regional chief pilot acting as the first officer. However, due to a maintenance problem with one of the company's C99 airplanes that stranded several passengers at Anniston, it was decided that the regional chief pilot would ferry the airplane on June 7, 1992. At the public hearing, the chief pilot stated that there were no other captains available on June 7, 1992, to ferry the airplane other than the regional chief pilot. As a result of this flight, the regional chief pilot had accrued the maximum number of hours allowed for 7 consecutive days, and therefore, he could not fly the next day. The regional chief pilot had been scheduled to fly with the first officer on flights 860 and 861 on June 8, 1992. At the public hearing, the chief pilot testified that since the captain was in place in Tuscaloosa on June 7, the decision was made collectively by the chief pilot, the crew scheduler, and the president of GP Express to have the captain fly the following day with the first officer.

The first officer, age 24, was hired by GP Express Airlines on April 30, 1992, as a first officer on the Beech C99. He possessed a commercial pilot certificate with ratings of airplane single-engine land and multiengine land, and instrument airplane. He also possessed a flight instructor certificate with ratings of airplane single-engine land, instrument airplane. His first-class medical certificate

was issued on December 27, 1991, and contained the restriction that he must wear corrective lenses.

Prior to being hired by GP Express, the first officer's professional flying experience was primarily acquired as a general aviation flight instructor in single-engine fixed-wing airplanes, on both a part-time and full-time basis, from August 1988 to November 1990. The GP Express ground and flight training records for the first officer indicate that as of April 30, 1992, he had accumulated a total of 1,100 flight hours. Of this experience, 115 hours were in multiengine airplanes, 25 hours were in actual instrument conditions, and 55 hours were instrument flight using a view-restricting device.

The first officer's latest personal logbook indicates that he had accumulated a total of 1,234.2 flight hours, of which 37.7 hours were in actual instrument conditions and 62.9 hours were in simulated instrument conditions.

On August 17, 1991, the first officer completed 50 hours of GP Express' initial ground training program for the C99. Shortly thereafter, a reduction in the airline's operations resulted in the first officer being furloughed until April 1992. Upon his return to the airline, he underwent flight training in the C99. Initially, this consisted of three night flights totaling 5.3 hours, which were completed on April 27, 1992.

On April 28, 1992, the first officer failed to satisfactorily complete the first 14 CFR Part 135 airman competency/proficiency check applicable to the second-in-command position. The duration of the check flight was 0.9 hours and was administered by an FAA-authorized check airman employed by the airline. The areas of deficiency were: steep turns, approaches to stalls, rejected landings, landings from circling approaches, emergencies, instrument procedures for circling approaches, judgment, and crew coordination. According to the President of GP Express, it was company practice to automatically give a failing grade on judgment and crew coordination when pilots failed any maneuver. On April 30, 1992, the first officer satisfactorily completed a 1-hour proficiency check administered by the airline's chief pilot. The first officer's flight training record indicates that he also received 1 hour of flight training under nighttime conditions on April 30. The records do not reveal the areas covered during this training flight. The first officer's personal flight log indicates only one entry for April 30, 1992, which was a day flight of 1 hour. All of the first officer's training flights were accomplished within the airline's midwest route structure.

During April and May of **1992**, the first officer flew 7.3 hours and **83.2 hours, respectively, within GP Express' midwest route structure**. GP Express flights **860** and **861** were the first officer's first trips on the airline's southern route structure. At the Safety **Boards** public hearing, the first officer testified that the last time he had flown a full procedure ILS approach in a nonradar environment to an uncontrolled airport was during **the course of his training at GP Express**. He further stated that none of these training flights at GP Express were conducted under any kind of **radar control** and **that his training at GP Express did include full procedure ILS approaches**.

There was **no record of** any incidents, accidents, flight violations, or enforcement investigations in either the captain's or first officer's **FAA** airman records.

1.6 Aircraft Information

The airplane was a Beech Aircraft Corporation model C99, serial number **U-185, registration N118GP**. The airplane cabin was configured to accommodate **15** passengers. The airplane was acquired by GP Express on October **25, 1990**. At that time, the airplane had accumulated **6487** hours of flight time and **5794** cycles. At the time of the accident, the airplane had accumulated **9725** hours of flight time and **11,109** cycles. The airplane was maintained under an FAA-approved continuous airworthiness maintenance program in which a routine **inspection of the airplane was accomplished after every 75 hours of flight time** and a detailed inspection of a portion of the airplane after every **150** hours of flight time. The program was created to provide a complete airworthiness inspection of the airplane every 600 hours of flight time. The airplane was last inspected on June **1, 1992**, and had accumulated **27.8** hours since that inspection. The airplane was equipped with two Pratt & Whiney PT6A-36 engines, a weather radar unit, and appropriate equipment for IFR operations. The airplane was not equipped with, nor was it required to be equipped with, a ground proximity warning system (GPWS) or a radio altimeter.

Inspection of the maintenance records indicated no deferred maintenance items. The airplane's flight log, which was aboard the airplane, was not recovered. Crews that had previously flown the airplane stated that everything on the airplane had been working properly. The investigation found that the airplane had been within its weight and balance limitations during the accident flight.

Pilots for GP Express reported that the airplane's intercom system had recently been changed from a push-to-talk system to a voice-activated system. They reported that due to the high noise level in the cockpit of the Beechcraft C99, an intercom system was necessary for the pilots to communicate effectively. Several pilots reported that the voice-activated system allowed too much ambient cockpit noise to come through on their headsets and occasionally made intracockpit communications difficult.

1.7 Meteorological Information

At 0847, the reported special surface weather observation taken by the Anniston Automated Flight Service Station was:

Clouds--700 feet scattered, estimated 1,500 feet broken, 9,000 feet overcast; Wind--090° at 5 knots; Visibility-3 miles in fog and haze; Temperature--74°F; Dew point--71°F; Altimeter setting--30.06; Remarks--rain ended at 15 minutes after the hour, clouds were scattered variable to broken.

1.8 Aids to Navigation

There were no reported or known difficulties with the navigational aids at the time of the accident. On June 8, 1992, immediately after the accident, technicians from the FAA performed a ground evaluation of the Anniston runway 5 ILS approach system. The evaluation found that the middle marker was not in service. The technician stated that heavy rain in the area on June 8, 1992, prior to the inspection, may have caused the middle marker to shut itself down. The transmitter was reset and operated normally. A flight test conducted on June 9, 1992, found that all parameters were within established standards and tolerances. Other flightcrews that had flown the ILS runway 5 approach to Anniston prior to the accident reported that they did not experience any problems with the ILS equipment on the approach.

1.9 Communications

There were no reported or known air-to-ground communications difficulties.

1.10 Aerodrome Information

Anniston Metropolitan Airport is located 5 miles southwest of Amiston, Alabama, at an elevation of 611 feet msl. The airport has one runway, 05-23, which is 7,001 feet long by 150 feet wide. The airport is served by a common traffic advisory frequency (CTAF), operated by an FAA flight service station in the airport. Runway 5 has an ILS and **high** intensity runway light system. **The** glideslope intercept altitude **for** the runway 5 ILS approach at the BOGGA intersection is 2,018 feet, and BOGGA is **4.3** miles from the runway.

1.11 Flight Recorders

N118GP was equipped with a B+D Avionics and Instruments CVR, serial number A01035. The airplane was not equipped, nor was it required to be equipped, with a flight data recorder (FDR).

Although the quality of the CVR recording was generally good, the recovery of critical crew conversations was hampered by the simultaneous recording of the audio signals from the crewmembers' intercom microphones and radio transmissions on the same CVR channel. Thus, the benefits gained from recording intracockpit communications were reduced or eliminated by overlapping and competing radio transmissions that were recorded on the same CVR channel. A similar problem also has been observed in other airplanes when the crewmembers use "hot" boom microphones in flight. As a result of the investigation of the accident involving flight 861, on **January** 6, 1993, the Safety Board recommended that the **FAA**:

Require, for aircraft that must **be** operated by two crewmembers and **be** equipped with a four-channel cockpit voice recorder (CVR), the exclusive use of the third CVR radio channel to record only audio signals from the cockpit crew intercom system and the two "hot" boom microphones. (A-92-133)

1.12 Wreckage and Impact Information

The impact marks indicate that the airplane was on a heading of about 053° magnetic when it struck the heavily wooded 15° up-sloping terrain. Several trees **were** struck before the airplane struck the ground. **Measurements** of the broken trees indicated that the airplane's flightpath through the trees was about 1 to 2° down. The elevation of the accident site was about 1,800 feet msl.

The airplane came to rest upright on a heading of about 0800 magnetic. *The* wings and the fuselage forward of the aft cargo compartment were destroyed by a postcrash fire. The empennage was mostly intact but twisted around a tree. The actuators for the nose and main landing gear were in the extended position; indicating that the landing gear was down. The right and left flap actuator extensions were extended to a position that would indicate a flap position of 15°. Examination of the control system for the aerodynamic surfaces disclosed no indication of preimpact failure. All of the navigation equipment was destroyed by the postcrash fire. There was no evidence of a preimpact fire.

Both engines had separated from the airplane and were located forward of the airplane along the crash path centerline. Additionally, both propeller systems had separated from their respective engines. Subsequent examination of the engines and propeller systems found no evidence of preimpact failure or malfunction.

1.13 Medical and Pathological Information

The cause of death for the captain was determined to have been asphyxia, secondary to smoke inhalation. The cause of death for the two passengers was determined to have been blunt force impact trauma. The autopsy of the captain did not reveal any preexisting conditions that contributed to the accident. The toxicological specimens obtained, following the accident, from the captain and first officer, were negative for drugs (licit and illicit) and alcohol.

1.14 Fire

There was no evidence of an in-flight fire. The fuselage was largely consumed by the postcrash fire.

1.15 Survival Aspects

The accident was partially survivable depending upon an occupant's position inside the airplane and ability to exit the wreckage after the accident.

1.16 Tests and Research

1.16.1 Radar Study and Airplane Performance

Radar data recorded at the FAA's Atlanta Center and the Birmingham approach control facility were obtained for the accident flight. The Atlanta radar

data provided the latitude, longitude, and altitude of the airplane during the flight to a point about 13 miles east of the Anniston airport. The Birmingham radar provided the position and altitude of the airplane for about 30 seconds in an area about 4 miles north of the Anniston airport.

Calculations based on speed performance limitations of the airplane and the time between the last Atlanta Center radar return and the first Birmingham radar return indicate that flight 861 flew in approximately a straight line between the two points. Additionally, the flightcrew's CVR conversations for this time did not indicate any changes in airspeed or heading. Calculations based upon the data from the Birmingham radar site indicated that at a point about 4 miles north of the airport, flight 861 initiated a right turn of about 180° and then a left turn towards the north and continued turning right until heading southeast. The location of the accident site and a time correlation of the radar data, the ATC conversation, and the flightcrew's CVR conversation indicate that flight 861 completed its right turn north of the airport, intercepted the back course localizer, turned left to the Anniston runway 5 heading, along the back course localizer outbound, and descended into the terrain. Figures 2a and 2b are composite ground tracks of the airplane as provided by the radar data, CVR conversations, and performance calculations for the Beech C99.

1.16.2 Ground Proximity Warning System (GPWS)

Flight 861 was not equipped, nor was it required to be equipped, with a GPWS. However, the Safety Boards investigation considered whether the installation of a GPWS could have prevented the accident.

Examination of the topography data in the area of the accident was used with the radar study-developed route-of-flight to determine the amount of warning time that might have been provided to the flightcrew, if N118GP had been equipped with a GPWS designed for commuter airplanes. The study indicates that the crew would have been given a visual flashing "GPWS" warning and an aural "TERRAIN TERRAIN - PULL UP" warning approximately 15 seconds before impact, as a result of a terrain closure rate in excess of 2,450 feet per minute (fpm) as it passed over a hill. Assuming a 3-second pilot recognition, and the response time to the aural warning, a wings level pull-up with a 1.03 G load factor would

⁵Localizer signals provide the pilot with course guidance to the runway centerline. The approach course of the localizer is called the front course. The inbound course line along the extended centerline of a runway, in the opposite direction to the front course is called the back course.

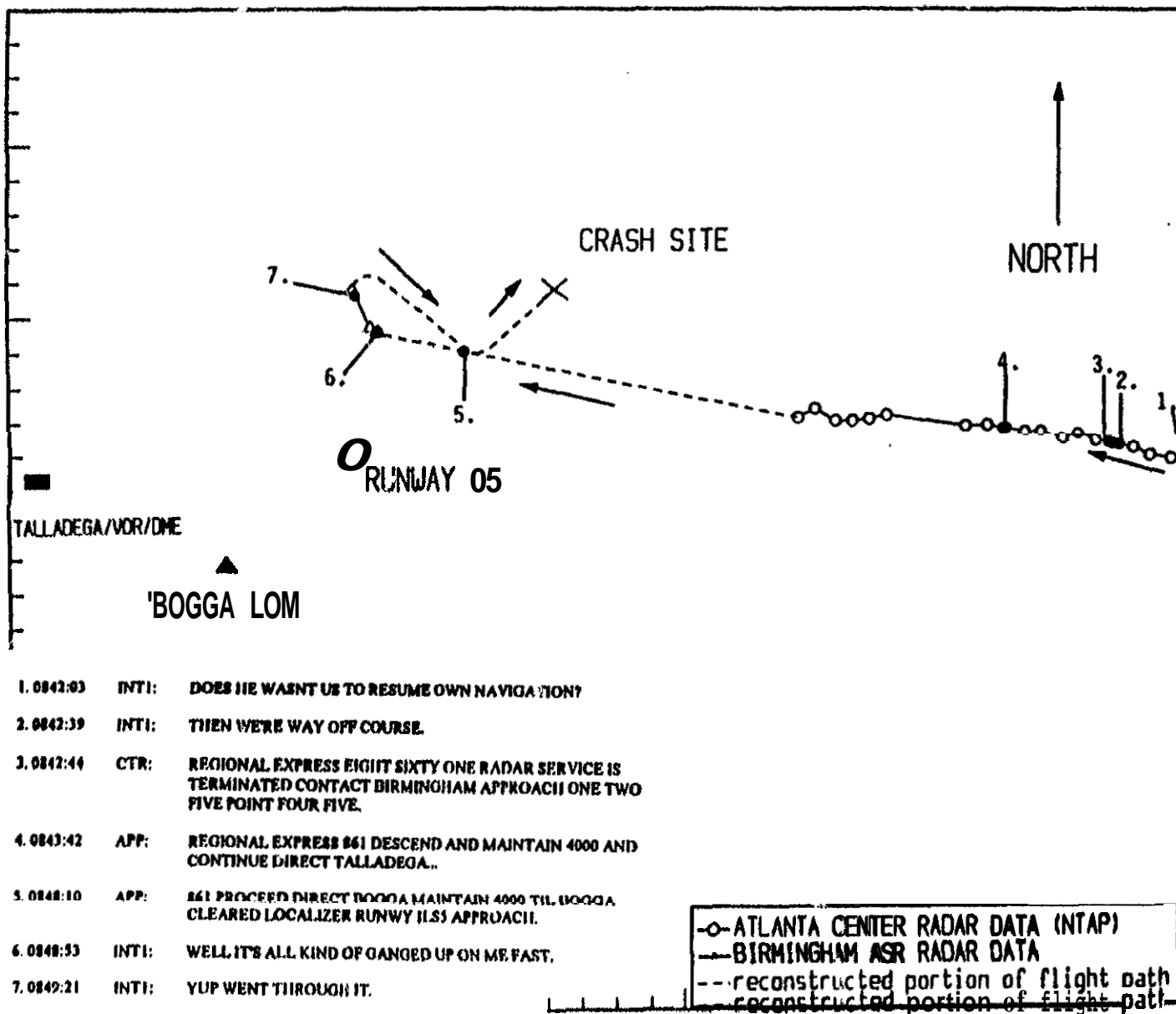


Figure 2a.--Composite ground track of flight 861 with CVR information.

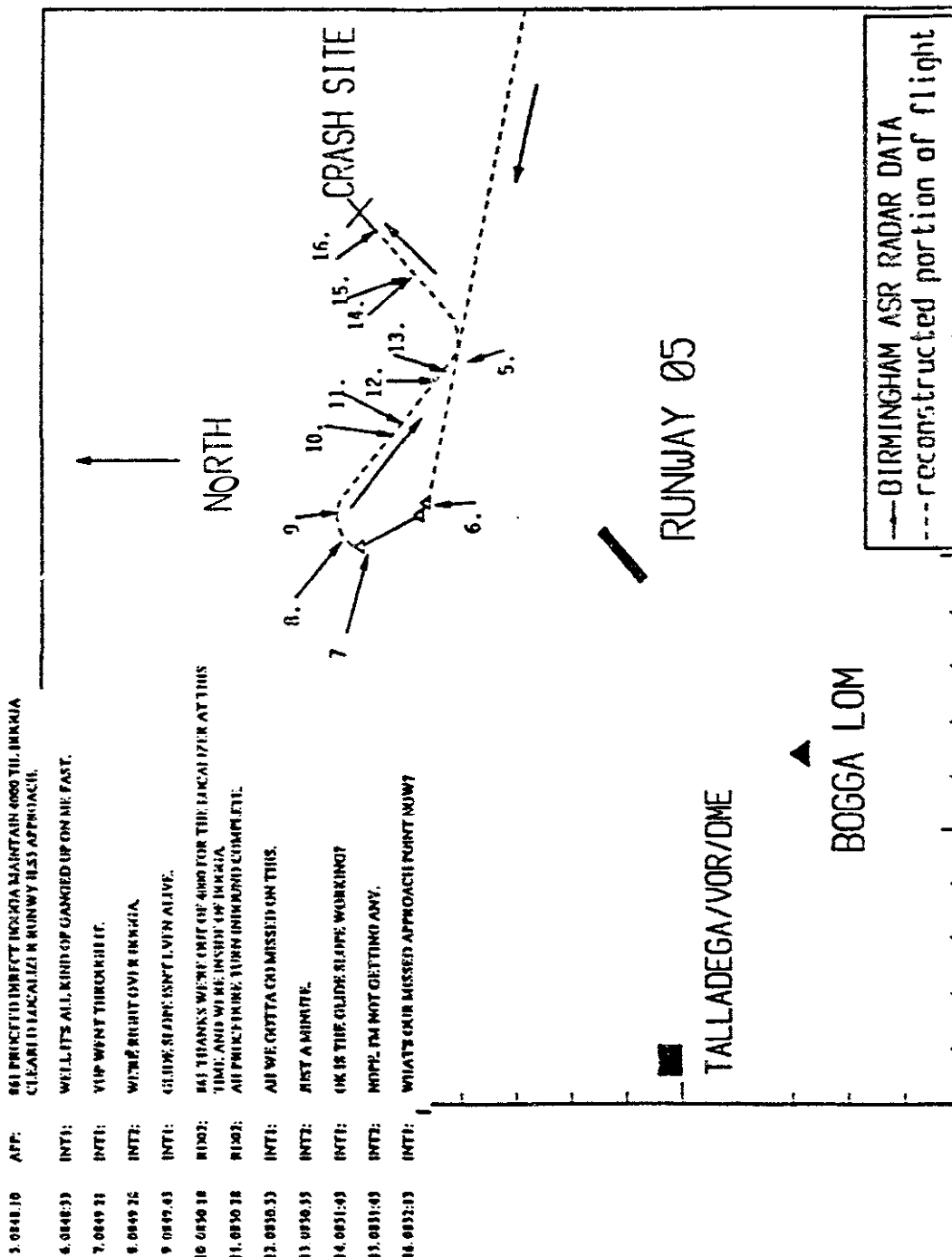


Figure 2b.--Composite ground track of flight 861 with CVR information.
(expanded continuation)

have allowed the airplane to clear the terrain at the impact site and the rising terrain beyond the impact site.

As a result of several accidents in which airplanes operating under 14 CFR Part 135 collided with terrain, the Safety Board issued Safety Recommendation A-86-109.6 This recommendation addressed the need for turbine-powered airplanes operating in commuter service to be equipped with a GPWS. In April 1992, the FAA issued a final rule requiring all turbine-powered airplanes with 10 or more seats, operated under 14 CFR Part 135, to be equipped with an operating GPWS within 2 years. As the Beechcraft C99 has more than 10 seats, airlines operating these airplanes will have to install GPWS prior to April 1994.

In the final rule, the FAA stated that in previous instances involving rules requiring equipment installation that not all airplanes meet the compliance dates in an orderly manner. The FAA further stated that in such cases, certificate holders have made an unacceptable number of requests to extend compliance dates. The FAA had considered an installation schedule as part of the rule making. However, it decided that Principal Operation Inspectors (POIs) will monitor Part 135 operators to ensure that an acceptable transition to the GPWS is made. The president of GP Express stated that the company was aware of this pending requirement but had not yet scheduled the installation of the systems.

1.17 Additional Information

1.17.1 GP Express Instrument Approach Training Procedures

The investigation found that the GP Express flight and ground training program, as well as the policy and procedures implemented by the airline, were in compliance with the commuter air carrier requirements contained in 14 CFR Part 135. The airline's instructions on the subject of stabilized approaches were contained in the company training manual, and consisted of a one-line statement that if a descent rate was in excess of 1,000 fpm within 1 mile of the end of the runway, the approach should be abandoned. The instructions did not mention a target approach airspeed, heading, or altitude. Additionally, the instructions did not

⁶Safety Recommendation A-86-109. "Bay Harbor Airlines flight 1808, Beechcraft 8-99, N30WP, Auburn-Lewiston Airport, Auburn, Maine, August 25, 1985" (NTSB/AAR-86/06); "Henson Airlines flight 1517, Beechcraft B-99, N339HA, Shenandoah Valley Airport, Grottoes, Virginia, September 27, 1985" (NTSB/AAR-86/07); "Simmons Airlines flight 1746, Embraer EMB-110p1, Phelps Collins Airport, Alpena, Michigan, March 13, 1986" (NTSB/AAR-87/02)

specify the maximum permissible ILS glideslope and localizer deviations before the conduct of a missed approach would become mandatory.

The f i t officer stated at the public hearing that he did not recall having received **training** on the stabilized approach concept. The regional chief pilot for **GP** Express' southern operation testified that he was not aware of any company stabilized approach criteria.

The airline's director of operations testified that GP Express' stabilized approach criteria were not as comprehensive as those established by a major air carrier that he had previously worked for as a line and training pilot. The director of operations and the chief pilot of the airline both testified that a more comprehensive stabilized approach policy, with appropriate training and rigid adherence to the policy by the flightcrews, would enhance the safety of their flight operations.

The **GP** Express training manual for the C99 airliner provided the following procedures for an ILS approach:

The instructor pilot or **ATC** shall clear the trainee for a front course ILS approach from any specified position. The localizer frequency should normally be tuned and identified on both navigation receivers and the front course set on the course selectors. To maintain orientation to a selected VOR, the navigation receiver of the pilot not flying may remain set to it and displayed on the associated **HSI**, the **RMI**, or both. The ADF will be tuned to the outer marker and identified, and the marker beacon receiver turned on, tested, volume set, and **high** sense selected. The **RMI** needle operates from the ADF and selected navigation receiver. After tuning the receivers, check **all** indicators for warning flags. Once the final **turn** for localizer interception has been made, the pilot not flying will tune and identify the ILS frequency and reset the course selector (if previously set to the reference VOR) prior to localizer interception. The before-landing checklist will be completed to flaps prior to reaching the outer marker inbound. This will place the flaps at Approach and the airspeed stabilized at 140 knots. **As** the glideslope **is** captured, the landing gear will be extended and **130KIAS** will be **maintained** until approaching the runway threshold or initiation of the missed approach. At the **MAP** (missed approach point), if the instructor pilot calls, "Minimums, no runway," the **student** shall execute the missed approach. That

attitude should be smoothly rotated to 10 degrees above the horizon as climb power is applied. With a positive rate of climb established, retract the landing gear, accelerate to 120 KIAS and follow normal flap retraction schedule.

1.17.2 72-Hour History of Flightcrew

The following information on the activities of the flightcrew prior to the accident was provided by persons who were familiar with their activities. The captain and the first officer were roommates, domiciled in an apartment in Tuscaloosa, Alabama.

After completing his training at GP Express' facility in Grand Island, Nebraska, on Friday, June 5, 1992, the captain traveled to Enterprise, Alabama, to visit his family. He was due to report to Tuscaloosa, Alabama, on Monday night, June 8, to be prepared for a flight on June 9. On June 5, 1992, he stoped by the Enterprise Airport. Two pilots who spoke with the captain remarked that he was in good spirits and excited about starting "his career" as an airline pilot. The captain spent the rest of the day, and Saturday, June 6, with his family.

On Sunday, June 7, the captain packed his belongings for the trip to Tuscaloosa, went shopping, and then went to a movie with his oldest son. He returned home about 1700, and shortly thereafter, received a phone call from GP Express, asking him to fly the next day and informing him who would be the first officer. According to the captain's wife, he was concerned that he would not be flying with GP Express' regional chief pilot on his first day of work as was originally planned.

The captain's wife said that he then telephoned the first officer and expressed his concern about not flying with the regional chief pilot, and that both the first officer and he were new to the southern operation. He then left for Tuscaloosa, arriving at the apartment about 2100.

The first officer arrived in Tuscaloosa on June 4, 1992, as part of his transfer from GP Express' midwestern operation to the southern operation. He spent the evenings of June 4 and 5 in a hotel after spending the days looking for an apartment. On June 5, he checked in with the GP Express local office and was asked to drive to Muscle Shoals, Alabama, to pick up a pilot who had ferried an aircraft there. The first officer accepted the task, arriving back in Tuscaloosa about 2200.

On June 6, the first officer moved his belongings into the apartment, and on June 7, he unpacked and ran errands. That evening, he went to the airport and picked up the schedule changes, which assigned him to fly the next day with the captain.

According to the first officer's testimony, he and the captain both went to sleep about 2200 on the night of June 7 and awoke about 0300 on June 8. They had a light breakfast and arrived at the Tuscaloosa airport at 0400. The first officer preflighted the airplane, filled out the paperwork, and checked the weather. The first officer testified that the flights from Tuscaloosa to Anniston and then on to Atlanta were uneventful, and that they had fueled the airplane and picked up the new weather information before they departed Atlanta. The first officer stated that "since this was the captain's first day, she captain did all of the flying, and I handled the paperwork and general company administrative procedures." GP Express' General Flight Operations Manual standard procedure instructed the first officers to handle paperwork and general administrative details during the flight.

1.17.3 Operator Information

The parent corporation to GP Express, Inc., GP AIR, Inc., was founded in December 1975, as an on-demand air charter service. In September 1985, GP AIR, Inc., received notification from the Department of Transportation (DOT) that Essential Air Service (EAS)⁷ bids were being accepted for service along two routes from Nebraska to Denver, Colorado. In December 1985, GP AIR, Inc., was awarded the contract and subsequently created GP Express, Inc., to carry out that scheduled service under 14CFR Part 135.

Representatives from GP Express stated that in 1986, about 62 percent of the airline's revenue came from EAS contracts. They said that the airline carried about 12,000 passengers annually. In 1992, the airline had grown considerably with a northern route structure that included the states of Colorado, Nebraska, South Dakota, Minnesota, Iowa, and Missouri. In March 1992, the airline was awarded an EAS contract to provide service in Georgia, Alabama, and Mississippi. The company projected that in 1992, about 12 percent of its revenue would be from EAS contracts and that it would carry about 80,000 passengers. At the time of the accident, GP Express operated 7 Beechcraft C99s and 3 Beechcraft 1900s. The airline employed 26 captains and 26 first officers.

⁷Essential Air Service is a federal program that subsidizes scheduled air service to certain select cities.

GP Express' senior management structure consists of a chief executive officer (CEO), a president/general manager, a director of Operations, and a chief pilot. The CEO was the founder of the airline, and his aviation experience was in on-demand charters and commuter airline operations both as a pilot and as the owner/operator. The president holds a private pilot's certificate and has previous management experience with air carriers operating under 14 CFR Parts 135 and 121. He had been hired by GP Express about 1 month prior to the accident. Both the director of operations and the chief pilot had previously been employed as pilots and in supervisory positions with air carriers operating under 14 CFR Part 121.

1.17.4 Southern Route Structure

On September 18, 1991, DOT requested proposals from carriers who were interested in providing EAS at Anniston, Gadsden, Muscle Shoals, and Tuscaloosa, Alabama, and Laurel/Hattiesburg, Mississippi. The EAS team conducted an evaluation of GP Express' fitness to provide service to these cities. This evaluation included reviewing the FAA's aviation safety analysis system for enforcements and violations, contacting the FAA's regional counsel's office to discuss three open cases, and requesting comments from community leaders, airport officials, and representatives of connecting airlines about their opinion of GP Express' ability to provide adequate service. The evaluation also included a review of GP Express' management depth and financial ability to assure that the carrier had sufficient management expertise and capitalization to handle the expansion. Prior to awarding the contract, the POI for GP Express was contacted by an official of DOT to determine if GP Express had any operational problems that might make it unsuitable to expand into these new markets. The POI informed the official that there were no problems with GP Express at that time. On March 26, 1992, GP Express was notified that it had been awarded the EAS contract to serve these cities. Additionally, the EAS evaluation team performed an on-site inspection of GP Express' southern operation before the air carrier began service in the region.

In response to the EAS award, GP Express set up a schedule that would allow the airline to commence operations on June 6, 1992. This date was determined by GP Express management. Among the items on the schedule of events was the hiring and training of new pilots. Historically, GP Express had screened, hired, and trained its own pilots. In March 1992, GP Express received a letter from FSI describing its Airline Training Program as a source for qualified pilots. Under the FSI program, the airline would be supplied with the resumes of prescreened applicants that met GP Express' qualifications. Once an applicant was selected by GP Express, FSI would train the prospective employee in the operations

of the airline and give the necessary training in the Beech C99. To provide quality control of FSI's training program and to ensure that each pilot met the airline's standards, GP Express' FAA-designated check airman conducted the final flight check of each applicant. GP Express signed a contract for the FSI program on April 4, 1992. Representatives of GP Express stated at the public hearing that the company would save about \$40,000 by utilizing the FSI program. The president of GP Express stated that the FSI agreement also allowed Operations management to focus on oversight of the new southern operations, and to perform their other responsibilities for managing the airline's flight department, while FSI performed the training.

When the contract was signed, both GP Express and FSI were considering hiring only first officers through the FSI program. However, after GP Express had surveyed the number of captains who were willing to transfer to the new southern operation and the number of first officers who were qualified to be upgraded to captain, GP Express management realized that at least one captain position would need to be filled from the newly hired pilots. After reviewing the applications from FSI and interviewing the selected candidates, the chief pilot and director of operations selected the captain of flight 861 to be hired directly as a captain, rather than as a first officer. Their decision was based upon the captain's flight experience in aircraft that required two pilots, his maturity, and his experience as an instrument flight instructor in the geographic area to be serviced. GP Express' flight operations manual states that the minimum qualifications for being selected as a captain require an ATP certificate, 1,500 hours of flight time, and 750 hours of multiengine flight time. The president of GP Express stated that the final selection is made on the basis of the prospective captain's total experience. The FAA requires, in 14 CFR Section 135.243, that a captain of a multiengine commuter air carrier aircraft possess an ATP certificate. The operating experience requirements contained in 14 CFR Section 135.144 state that a pilot must have a minimum of 20 hours of experience in a multiengine turbine engine-powered aircraft in the make and basic model aircraft in order to be designated as a pilot-in-command.

The FSI training instructor, who was responsible for the ground school and flight training, testified that he was initially concerned that GP Express wanted to train a person with relatively few hours in fixed-wing aircraft and no experience in fixed-wing turbine-powered airplane to be a captain. The FSI training instructor voiced these concerns to his supervisor at FSI, GP Express' chief pilot, GP Express' director of operations, and a GP Express FAA check airman. The chief pilot and director of operations explained to the FSI training instructor and supervisor the basis upon which the captain of flight 861 had been selected for immediate training

as a captain rather than as a first officer. Following this discussion, both the FSI supervisor and training instructor agreed to continue training the captain. He testified that the captain was given instruction beyond the other students in order to prepare him as a captain. The FSI training instructor testified that after the captain completed the training, the instructor believed that the captain was fully qualified to carry out the duties as captain. However, during training, the instructor had found that the captain, on two occasions, did not use the first officer as a cockpit resource. He specifically told the captain that he must use and listen to his first officer.

The director of operations for GP Express had originally proposed 5 days for route qualification experience prior to starting service in the southern region. The director of operations stated at the public hearing that he believed that this experience would have been beneficial in that the flightcrews could gain experience working with each other and flying into new airports with terrain substantially different from that found in the midwest operation. The CEO and then-president of GP Express rejected the planned route qualification flights as king unnecessary. Representatives for the airline stated that the route qualification was not necessary because, "when pilots fly a charter, they do not perform a dry run" and that IOE on existing northern routes provided sufficient line operations experience.

Prior to commencing service in the southern region, GP Express conducted several "good will" flights to each airport that would be served. The purpose of these flights was to familiarize the local community leaders with GP Express. Additionally, these flights allowed GP Express management to better understand the logistics of the new operation and available facilities. The chief pilot for the southern region flew as captain on most of these flights. Afterward, the chief pilot developed a package of information for each airport and routes of flight, which was provided to each pilot. This information contained details on the approaches to the airport, where to get fuel, obstructions, etc. Each of the southern route pilots received this information prior to their assignment to the southern region, and they were briefed on airport operations for each airport. Also, the first officer had received an additional hour briefing from the regional chief pilot for the southern region the night prior to the flight.

1.17.5 FAA Surveillance

The Flight Standards District Office (FSDO) in Lincoln, Nebraska, is responsible for the surveillance of GP Express Airlines, Inc. At the time of the

accident, the **airline** was in compliance with the **FARs**, and the **FAA** had no pending certificate actions against the airline.

When GP Express was notified that it had been awarded the contract for the southern region, the airline's director of operations notified the Lincoln **FSDO**. About 2 weeks prior to GP Express commencing its southern operations, the Lincoln **FSDO** requested geographic surveillance support from the Birmingham, Alabama, **FSDO**. On June 4, 1992, the POI and the Principal Maintenance **Inspector** who were assigned to GP Express went to the Birmingham **FSDO** to brief the facility personnel on the operation of the airline. Under the flight standards geographic program, the Lincoln **FSDO** was responsible for the overall work program planning to ensure adequate surveillance and airman certification for GP Express. The Birmingham **FSDO** was responsible for providing surveillance of GP Express' southern operation in accordance with the guidance provided by the Lincoln **FSDO**. While in Birmingham, the POI flew on several GP Express "good will" flights to observe the new operation.

The chief of the Birmingham **FSDO** agreed to provide geographic surveillance of GP Express' southern operations with two ~~part~~ 135 qualified aviation safety inspectors--one airworthiness inspector and one operations inspector. On the morning of the accident, two inspectors from the Birmingham **FSDO** were waiting at the Anniston airport to perform a ramp and en route inspection on flight **861**. This would have been the first inspection of the airline by the Birmingham **FSDO**.

At the public hearing, the POI testified that he had been informed by GP Express' director of operations that one of the newly hired pilots was selected to be a captain for the new southern region flights. The POI stated that he was not involved in this decision, but was aware that GP Express had upgraded all of the first officers that were eligible for promotion to captain and that it was a necessary choice.

2. ANALYSIS

2.1 General

The investigation found that the flightcrew was properly certificated and qualified in accordance with applicable FARs and company requirements. The pilots were in good general health and had proper FAA medical certificates at the time of the accident. There was no evidence of adverse medical conditions that affected the flightcrew, and they were not under the influence of, or impaired by, drugs or alcohol.

The airplane had been maintained in accordance with applicable FARs and company operations specifications and maintenance procedures. Examination of the airplane's structure, flight control system, propellers, and powerplants disclosed no evidence of a malfunction or preexisting problem that would have either caused or contributed to the accident. The airplane's navigational equipment was severely damaged by fire and could not be tested. The landing gear and flap positions indicated that the airplane had been properly configured for the approach.

Although there were some rain showers near the airport, the ceiling and visibility were above the minimum approach requirements at the time of the accident. Therefore, weather was not a factor in the accident.

The circumstances of this accident indicate that the flightcrew experienced a loss of situational awareness that led to a controlled collision with terrain. The Safety Board's investigation examined the possible events that could have caused the flightcrew to lose awareness of the airplane's location and to ultimately deviate from established instrument flight procedures.

2.2 Crew Awareness

The Safety Board believes that a combination of the flightcrew's activities during the days leading up to the accident, their expressed enthusiasm for starting their new careers, their lack of familiarity with operating an airplane together, and possible fatigue may have degraded their performance. As previously discussed, the captain completed his IOE on June 3, 1992, in Nebraska, and then returned to visit his family and friends in Alabama. While this probably was intended to be a relaxing time for the captain, he expressed some anxiety about his assignment. Additionally, the first officer had just completed his first full month

with GP Express, was busy moving to Alabama, and was trying to find an apartment.

The captain arrived in Tuscaloosa at 2100 on June 7. Both pilots went to sleep about 2200 and awakened about 0300 after having slept a maximum of 5 hours. The accident occurred just 5 hours later after two successful flights of less than 2 hours. Therefore, the pilots should not have been fatigued by the flight and duty time. However, the short sleep period and early rising time are factors that could have led to fatigue. Consequently, there were elements present that had the potential for inducing fatigue with associated substandard performance. The accident circumstances certainly illustrated substandard performance on the part of both pilots that is not readily explainable.

The anticipation of moving to a new area and starting their careers could have masked any weariness felt by both crewmembers from their reduced hours of sleep or rest. This emotional stimulation could have been amplified or sustained by the fact that this was not only the captain's first day as an unsupervised captain, but also his first day as an unsupervised airline pilot. Also, this was the first officer's first day in the southern region and the first time he would be flying with this captain.

It is likely that the crew was giving considerable advance thought to their expected activities during the initial flights from Tuscaloosa to Anniston, then to Atlanta. Additionally, the crew may have been concerned with anticipated ATC difficulties in the Atlanta area, including keeping up with ATC instructions and the possibility of long delays. However, these two legs proved to be uneventful, as was the departure from Atlanta. By the time the crew was en route back to Anniston, their earlier apprehension could have begun to subside. Additionally; the pilots may have developed a sense that flying these remaining legs was going to be relatively routine. These factors could have contributed to an unintentional relaxation of their vigilance.

The actions of the first officer, as recorded on the CVR, suggest a relaxed and almost casual approach to the flight environment. Likewise, the actions of the captain, as recorded on the CVR, also indicate a passive acceptance of the first officer's "coaching," and resulted in his improper management of the flight. This was evident on several occasions, in that he did not assert his concerns about the position of the airplane along the route of flight or on the approach. Although behavior of this kind has been observed in persons who clearly were fatigued, the evidence in this case does not warrant a conclusion that fatigue adversely affected

crew performance on this accident flight. Nevertheless, the Safety Board also cannot rule out such a possibility.

2.3 The Flight and Crew Performance

Because the captain had recently joined the airline, and the first officer was relatively new to airline operations, it is likely that both were highly motivated to perform well in their respective assignments. The captain was under additional pressure to perform well as it was his first unsupervised revenue flight. The captain's statements to his wife and the first officer on the evening prior to the accident indicate that he experienced some concern regarding his first day of line operations.

The flight records of both pilots indicate that they had had recent experience in IFR operations and with conducting ILS approaches in nonradar environments. Both pilots had instrument flight instructor certificates and had received recent ground and flight training. Additionally, the majority of the captain's flight experience was in a highly regimented military flight environment in which he had considerable experience as an aircraft commander and instructor in two-person flight deck operations. Therefore, based upon the flightcrew's experience, training, and motivation, it could be anticipated that both pilots would have had no technical difficulties in performing their duties.

The investigation found that the captain and first officer were similar in age and hours of flight experience. Although the captain was slightly older and had more total flight hours, the first officer had about 100 hours more airline flight experience than the captain. Therefore, it would be expected that both would have considered the other equals in their ability to operate the C99 in line operations. Although the captain chose to perform all the flying himself, this was probably because it was his first day as a captain and not because of an unfavorable reflection on the first officer's abilities.

The first officer testified that the first flight of the day, from Tuscaloosa to Anniston to Atlanta, was completed without any difficulty. The CVR transcript indicates that the flightcrew experienced no problems; during the taxi, takeoff, and departure from Atlanta to Anniston. At 0841, the center controller cleared the flight to "descend pilot's discretion maintain five thousand." The captain then remarked, "does he want us to resume own navigation?" to which he received no reply from the first officer. The captain then stated, "As far as I'm concerned I'm still on vectors two eight zero." The first officer replied, "yeah two eight zero's fine."

Because we're on course anyway *so* let's just hold it." The captain responded, "yeah, but we're slowly drifting off." This comment resulted in a short dialogue between the crew as to whether or not the airplane was on course. This conversation included the captain asking, "what's the course?" To which the first officer replied, "zero eight five inbound." The conversation concluded at 0842:39 with the captain's statement "then we're way off course." However, there was no further discussion between the pilots about how they were planning to determine their position or otherwise get the airplane back on course. Based upon the first officer's testimony at the public hearing, the Safety Board believes that the flightcrew, thinking that the flight was still receiving ATC guidance, intended to rely on ATC to provide the necessary course vectors in order to either visually acquire the Amiston airport or to guide them to the initial approach fix.

The Safety Board believes that at this time in the flight the captain lost situational awareness because of his uncertainty about the ATC instructions, his uncertainty about the airplane's course and its position relative to the airport, and the first officer's statement that the inbound course was 085°. Additionally, this conversation indicates that the first officer was not providing the captain with the requested information or adequately assisting the captain in the management of the flight. The fact that the captain did not insist on clarification about ATC instructions, whether the radar services had been terminated, or about the first officer's Statement concerning the airplane's intended course, further indicates that the captain had lost, or was losing, control of the situation. He had, in effect, turned the management of the flight over to the first officer. It is possible that the first officer meant to say the course was on the 085° radial from the Talladega VOR, rather than a "course" of 085°. The actual heading would have been the reciprocal or 265°. Providing the captain with the radial rather than the actual course only increased the captain's confusion about the proper course and the airplane's position. The direct airway from the Talladega VOR to the Hartsfield Atlanta International Airport is on the 085° radial.

At 0842:44, the controller informed the flightcrew that radar services were terminated and to contact Birmingham Approach Control. The captain did not comment on this information, and at the public hearing, the first officer stated that he (the first officer) believed that the flight had been receiving course vectors from ATC. Shortly thereafter, the first officer asked if the captain wanted to conduct the ILS approach, to which the captain replied in the affirmative. The flightcrew then

became occupied with accomplishing the in-range checklist⁸ and tuning the radios for the ILS approach. There was no indication on the CVR recording that the flightcrew had selected the appropriate radio frequency of the BOGGA nondirectional beacon or that they confirmed that they were receiving the correct signal.

At 0847:46, the approach controller informed the flightcrew of the latest weather for Anniston. The first officer acknowledged the transmission, then at 0848:10, he asked the captain, "you want to go around for the ILS?" About the same time, the controller told flight 861 to "proceed direct BOGGA maintain four thousand 'til BOGGA, cleared localizer run- er ILS runway five approach." The first officer's suggestion that the captain should go around for the ILS prior to crossing BOGGA is an indication that the first officer was also uncertain about the position of the airplane in relation to the navigational facilities or the airport.

The captain then asked the first officer to contact the controller and inquire about flight 861's distance from BOGGA. This statement indicates that the captain was still uncertain about the airplane's position. His statement also indicates that he believed that ATC was still in radar contact with the flight, despite the controller's previous advisory to the flightcrew that radar contact had been terminated. It is possible that the captain mistakenly believed that he could still receive radar assistance from the controller. Rather than contact the controller, the first officer mentally computed the airplane's distance from BOGGA, apparently with respect to the distance measuring equipment's indicated distance from the Talladega VOR. The Safety Board believes that had the first officer contacted the controller, it would have been apparent that radar contact had been lost and that the captain needed to confirm his position with the navigational equipment on board the airplane. The CVR comments also indicate that the ILS approach briefing was not conducted nor had the captain reviewed the ILS approach chart. These events suggest a breakdown in crew coordination, which further set the stage for the accident.

From the CVR transcript, it appears that the first officer recognized that the captain was having difficulty with the workload and started providing instructions to the captain to help him with the approach. Indeed, during the public hearing, the first officer testified that he recognized that the captain needed help with the approach. At 0848:49, the first officer asked the captain, "didn't realize

⁸The in-range checklist includes the flightcrew reviewing the approach procedures, informing the passengers to prepare for landing, and contacting the GP Express agent at the destination by radio.

that you're going to get this much on your first day **bid** ya?" The captain acknowledged that "it's all kind of ganged up here on me a little fast." This comment is another indication that the captain was beginning to lose awareness of the situation and was overloaded by the events. Yet, neither pilot requested assistance from ATC in determining the position of the airplane. Compounding the **flightcrew's** workload was the inability of the first officer to expeditiously tune the navigational radios to the correct frequencies for the approach.

At 0849:02, the captain asked the first officer, "got the localizer in?" To which the first officer replied, "workin' on it." At 0849:20, the first officer stated, "there you go." To which the captain replied, "yup went right through it." The first officer then inquired, "can you go around **for** it?" The implication from these statements is that the airplane had passed through the localizer course for the runway. However, there was no indication by the flightcrew that the airplane had reached the BOGGA initial approach **fix (IAF)**, to which the flight had been cleared. Additionally, there was no discussion between the flightcrew about flying outbound from the airport and performing the procedure turn back toward the airport, as specified on the approach chart from the BOGGA IAF. The correlation of the CVR transcript with the radar **data** indicates that during the above times, the airplane was considerably north of BOGGA and in fact, north of the airport. The Safety Board's investigation could not determine why the flightcrew believed that the airplane had crossed over BOGGA. Figure 3 indicates **an** appropriate ground track of flight 861 after the controller cleared the flight direct to BOGGA and for the ILS approach to runway 5.

The radar **data** and the performance capabilities of the Beech C95 indicate that the flightcrew's reaction to receiving the localizer signal was to turn right in a mistaken belief that they were south of the airport and were turning towards the localizer course for runway 5. In actuality, the airplane had intercepted the back course localizer signal for the **ILS** approach. The airplane was north of the airport, flying away from runway 5. Even if the airplane had been south of the airport, the flightcrew began the approach, at cruise airspeed, while about 2,000 feet above the specified altitude for crossing the **BOGGA** approach **fix**, and while inbound to the runway. The Safety Board believes that it **would** have been very difficult to make a successful landing, as the flightcrew would have had very little time and distance in which to reduce the airplane's altitude, even if they had been in the proper location relative to the localizer and the airport. Again, the flightcrew

3. 0848:10 APP: 861 PRKCTD INBKGA, MAINTAIN 4000 THL INBKGA
 CLEARW'D LAC ALIFER RUNWY 05.51 APPROACH.

4. 0848:53 INT1: WELL, ITS ALL KIND OF GANCTED UP ON ME FAST.

7. 0849:21 INT1: YUP, WENT THROUGH IT.

8. 0849:28 INT2: WE'RE RIGHT OVER INBKGA.

9. 0849:43 INT1: GLIDE SLOPE, ISNT EVEN ALIVE.

10. 0850:18 INT2: 861 THANKS WENT OUT OF 4000 FOR THE LOCALIZER AT THIS
 TIME AND VOR INSIDE OF INBKGA.

11. 0850:28 INT2: ALL PRKCTD INBK, TURN IN(KUN)D COMPLETE.

12. 0850:53 INT1: ALL WE GOTTA GO MISSED ON THIS.

13. 0850:55 INT2: JUST A MINUTE.

14. 0851:43 INT1: OK IS THE GLIDE SLOPE WORKING?

15. 0851:49 INT2: NOPE, IM NOT GETTING ANY.

16. 0852:11 INT1: WHAT'S OUR MISSED APPROACH POINT NOW?

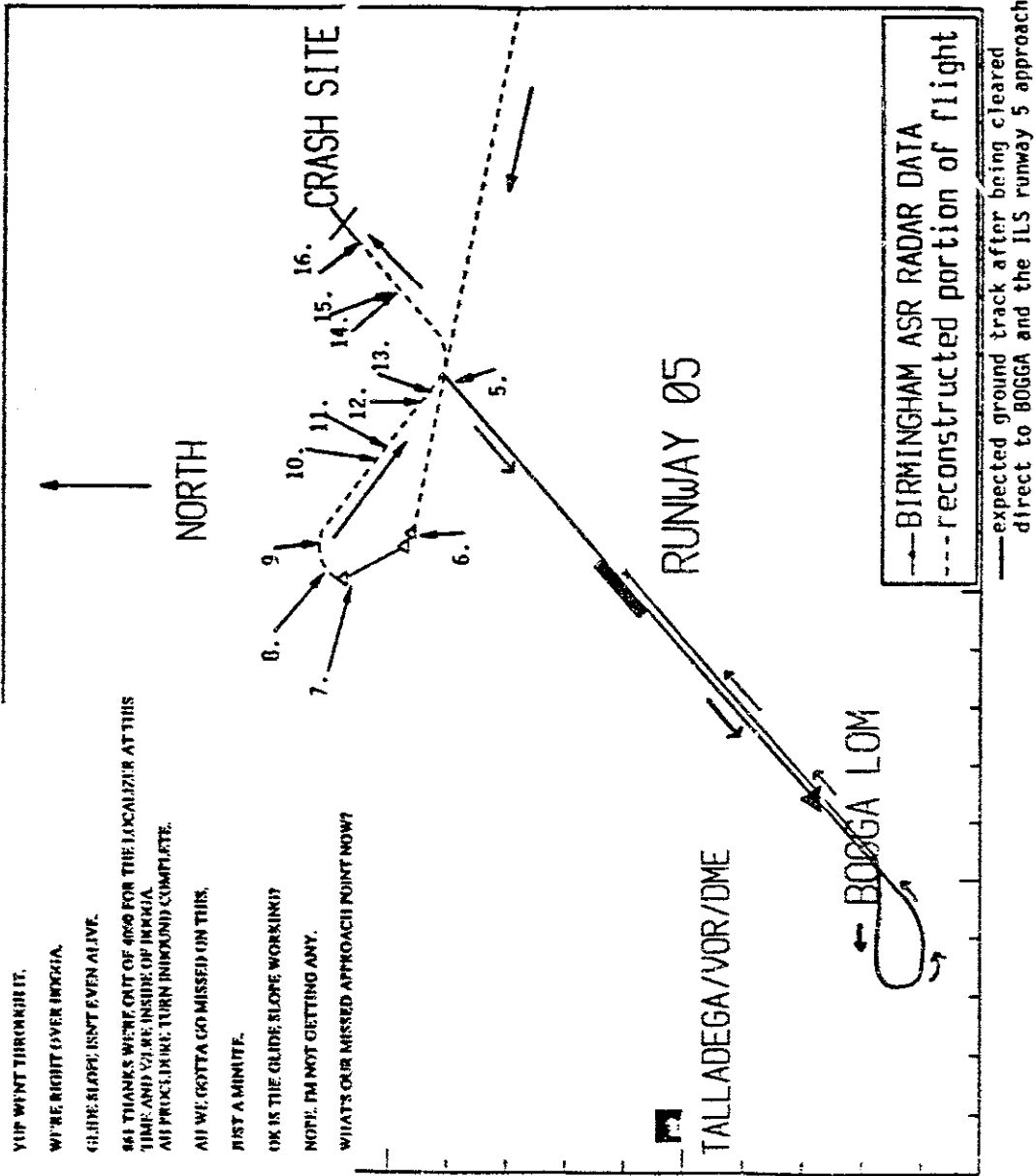


Figure 3.--Expected ground track of flight 861 for the ILS approach.

failed to acknowledge their situation and request help from ATC. The flightcrew should have abandoned the approach at *this* time. The failure to do so was causal to the accident.

At 0849:26, the captain stated that, "I thi i we're right over the outer-." The first officer interjected, "we're right over BOGGA. He kept us in real tight...we're four and a half out...go ahead and drop your gear, speed checks." At 0849:43, the captain stated that the "glideslope isn't even alive. What's the minimum altitude I can descend to 'til I'm established?" The first officer responded, "twenty two hundred." Collectively, these statements indicate that, even though neither flight crewmember was **certain** of the airplane's position, they each tried to reinforce the other's erroneous assumption that they could accomplish a safe approach from their current position. The statements show that the flightcrew was surprised about the airplane's position and was not prepared to commence the approach at that time. Additionally, the latter statements indicate that the captain did not have the approach plate on hand and needed the first officer to guide **him** through the approach. These events illustrate poor airmanship and judgment on the part of both pilots.

At 0850:18, the first officer reported to the controller that the flight was "out of four thousand for the localizer... inside of BOGGA." The controller replied, "yes **sir** and advise procedure turn inbound." At 0850:28, the first officer stated, "ah procedure turn inbound complete." As previously stated, **the** radar study and **CVR** correlation found that there was insufficient time for the flight to have made the procedure turn. At this time, flight 861 was north of the airport and was completing a right turn. Therefore, the first officer's statements were inaccurate, and in fact, the flight had turned right to intercept the localizer course without accomplishing the procedure turn, which would have required an initial turn to the left for an outbound course from BOGGA. Additionally, the first officer's statement only served to confirm the flightcrew's mistaken belief that the airplane's position was inside of BOGGA and that they were heading for the runway.

At 0850:53, **the** captain stated, "ah we gotta **go** missed on this." The first officer replied, "just a minute--there you go--there your gonna' shoot right through it again--there you go see." At 0851:12, the **first officer** stated, "okay we gettin' in close keep 'er **goin'**," followed by, "you're okay." The captain's statement at 0851:17, "hopin' no one on here's a pilot," indicates that the captain was uncomfortable with maneuvers for the approach and realized that another pilot might consider the flightpath **to** be unusual. The first officer's initial reply **was** jovial, and then, he probably believed that the airplane was intercepting the approach path.

These statements are additional examples of the captain's overreliance on the first officer's judgment and assumption **that** the first officer knew the position of the airplane along the approach. This exchange further illustrates a breakdown in crew coordination and **poor** judgment. The accident could have been prevented if the flightcrew had abandoned the approach.

During the approach, both the captain and the first officer continued to reinforce their mistaken belief that a successful landing could be made. At 0851:30, the first officer stated, "through twenty two..." The captain responded, "okay we're on our way" then, "there's the glideslope." The first officer replied, "we can continue our descent on down. We're way **high**." The captain then stated, "okay is the glideslope working?" The first officer replied, "nope **Im** not getting any...so with no glideslope, we're down to eleven hundred." The Safety Board believes that this dialogue is yet another example of the captain's acceptance of **the** first officer's assumptions.

The Safety Board concludes that a reversal of roles occurred during this flight--the captain, in effect, relinquished command of the airplane to the first officer. Each time that the captain was unsure of the airplane's position, even when he believed a missed approach should be accomplished, he yielded and continued to follow guidance from the first officer. The situation was compounded by the first officer's uncertainty about the position of the airplane and his continued assertion as **to** the next course of action. The first officer's eagerness to direct the flight and **his** overconfidence in **his** abilities was evident several times during the flight. Perhaps the most critical example was when both he and the captain noticed that their respective glideslope indicators were not indicating a glideslope signal. Rather **than** consider that the airplane was out of position, the first officer erroneously assumed that the ground facility must have been out of order. This error was then compounded by his providing the captain with the minimum descent altitude for the ILS approach with the glideslope out of service.

The Safety Board notes that the ILS approach to the Anniston airport was not complex or unusual, and expects that, independently, either pilot could have satisfactorily performed the approach. The Safety Board finds that the flightcrew's **loss** of situational awareness during the en route portion **of** the flight and their failure **to** positively establish their position prior to beginning the approach set in motion a chain of events, none of which was recognized either singly or collectively **as** reasons to abandon the approach.

The flightcrew's decision to try to lose excessive altitude in an attempt to make the landing is a further indication of the crew's poor judgment and decision-making process. The Safety Board believes that GP Express' lack of definitive stabilized approach criteria and the airline's practice of having only one set of approach charts on board the airplane contributed to the cause of the accident. Stabilized approach criteria would have provided the flightcrew with guidance on the acceptable airplane performance parameters and navigational limits to be observed during the approach. Once those criteria had been exceeded, a missed approach would have been mandatory. Additionally, the availability of another set of approach charts could have provided the pilots with the possibility of having the chart conveniently mounted on their respective control yokes during the approach for quick reference. The Safety Board believes that if the flightcrew had conducted an approach briefing and if the captain had had his own approach chart, he would not have had to ask the first officer about various aspects of the approach while attempting to fly it. Nevertheless, the pilots' failure to abandon the approach on several occasions when they were unsure of their position was the primary reason for this accident.

The Safety Board has addressed the concept of stabilized approach criteria to present approach and landing accidents on several previous occasions. For example, as a result of its investigation of a fatal general aviation accident⁹ the Safety Board issued Safety Recommendation A-90-016, which asked the FAA to:

Emphasize in its recurrent flight instruction refresher courses and any other means available the need to teach adherence to procedures specified in the pilot's operating handbook and the airplane flight manual and the need to teach adherence to the necessity of flying a stabilized final approach for landing.
(A-90-016)

In its letter on December 4, 1990, the FAA stated that it agreed with the intent of the recommendation and had sent a letter to flight instructor refresher clinic sponsors regarding stabilized approaches and, additionally, had included in its examination standards programs emphasis on procedures and proper instruction in stabilized approaches. On March 4, 1991, the Safety Board classified Safety Recommendation A-90-016, "Closed--Acceptable Action."

⁹Aviation Accident--Cessna 152, N9374B, Chicago, Illinois, April 15, 1989.

As a result of its investigation of an incident involving USAir flight 105,¹⁰ the Safety Board issued Safety Recommendation A-90-131, which asked the FAA to:

Direct principal operations inspectors to verify that the airlines they surveil have clearly established stabilized approach and missed approach procedures for nonprecision approaches, such as full-scale deflection of **localizer** needle when the airplane is inside the final approach ~~fix~~ (A-90-131)

In its reply of August 2, 1991, the FAA stated that it had revised air carrier operations bulletin (ACOB) 7-76-31 to direct the **POIs** to verify that appropriate air carriers have clearly established stabilized approach and missed approach procedures. Based on this response, the Safety Board classified Safety Recommendation A-90-131 "Closed--Acceptable Action" on November 1, 1991.

Because both pilots were certificated as instrument flight instructors, the Safety Board anticipated that they would have received the information on stabilized approaches mentioned in the FAA reply to Safety Recommendation A-90-016. Additionally, the Safety Board expected that the flightcrew would have received additional training on stabilized approaches from **GP Express** based on ACOB 7-76-31. As previously discussed, **GP Express'** operations and mining manuals lacked information on stabilized approach criteria. The nonstabilized approach flown by the flightcrew of flight 861 strongly indicates that this critical safety-of-flight information is not being adequately disseminated or followed. Therefore, the Safety Board believes that the FAA should require scheduled air carriers operating under **14 CFR Part 135** to develop and include in their flight operations manuals definitive criteria for conducting a stabilized approach. The provisions should specify that if the criteria are exceeded, a missed approach would be required.

The Safety Board believes that the practice of having only one set of approach charts available in the airplane is not in the best interests of flight safety. The Safety Board previously addressed this issue in its investigation of the accident involving **Bar Harbor Airlines** flight 1808.¹¹ As a result of that investigation, on

¹⁰Aircraft Incident Report--"USAir, Inc., flight 105, Boeing 727-200, N283AU, Kansas City, Missouri September 8, 1989" (NTSB/AAR-90/04)

¹¹Op. Cit. 6.

October 9, 1986, the Safety Board issued Safety Recommendation **A-86-105**, which asked the **FAA** to:

Amend **14 CFR 135.83** to require that all required crewmembers have access to and use their own set of pertinent instrument approach charts. (**A-86-106**)

In its reply of September 15, 1987, the **FAA** stated that it believed that a second **set** of charts would not serve to improve cockpit efficiency. In response to the recommendation, the **FAA** issued a bulletin that directed all **POIs** to ensure that flight crewmembers received **initial** and recurrent **training** on the crew concept with respect to the use of pertinent instrument approach charts and crew briefings prior to all approaches. The Safety Board found that there was considerable merit **in the FAA's** bulletin to improve crew coordination during instrument approaches. However, the Safety Board found that such a bulletin would not provide **the** same safety benefits as each pilot having access and **use** of his own set of approach charts. Therefore, on November 27, 1987, the Safety Board classified Safety Recommendation **A-86-106** "Closed--Unacceptable Action."

The Safety Board notes that air carriers operating under 14 CFR Part **121** are required to provide a set of approach charts for each cockpit crewmember. Air carriers operating under 14 **CFR** Part 135 are required to provide one set of approach charts for each airplane. During the public hearing, **GP Express'** director of operations stated that he, the chief pilot, and several other captains, had purchased their own approach charts in order to have the approach charts **immediately** available during an approach. The Safety Board believes that the practice of having only one approach **plate** available in aircraft requiring two pilots increases pilot workload during **the** approach and increases the potential for the miscommunication of critical information, as in **this** accident. Therefore, **the Safety Board** believes **that** the **FAA should** require that all aircraft operating under 14 CFR Part 135 that require two pilots should be equipped with two sets of approach charts.

The captain's statements to his wife **and** the regional chief pilot the **night** before the accident indicate that he **was** concerned about being unsupervised on **his first** flights in the southern region. The Safety Board believes that it would be normal for a person starting a new career to be **nervous** in such a situation. Additionally, the captain's only airline operations experience was obtained during **his IOE** training. Compounding this situation, lights 860 and 861 were his initial experience in **working** with the first officer. In such a situation, even a **person** with

prior experience **as** a captain with another **airline** might be nervous. As all of the **captain's** flight experience was obtained either in the military or through general aviation, he could have **been** uncertain about how to conduct the **flight**. Collectively, **these** events present a situation that **is** not in the best interests of flight safety. **This** situation could have been prevented if the captain had had the opportunity to gain **airline** flight experience as a first officer or **as** a captain on revenue flights with another captain acting **as** first officer. Therefore, the Safety Board believes that **14 CFR Part 135(c)(2)** should be amended to require that the pilot-in-command of a commuter air carrier flight that requires two crewmembers have at least 100 **hours** of flight time or **an** equivalent level of training in commuter air **carrier** operations requiring two pilots.

2.4 Cockpit Resource Management Training

The investigation found that **the** captain and first officer had received information on cockpit resource management (CRM) during the GP **Express** ground school training. **The** majority of this information was in the form of handout material intended for students to study independently. However, there were 13 test questions addressing **CRY** on the **final** examination. **The** investigation found that the captain received additional instruction **on** CRM during the training to better prepare him for duties as a captain; however, this training was not comprehensive.

During **his** training, the captain had been admonished twice by his FSI flight instructor for not **using his** first officer as a resource. The Safety Board believes that while the flight instructor was well intentioned, these admonitions to a new airline pilot with no experience in airline operations may have been counterproductive. The Safety Board believes that these admonitions may have increased the probability that the captain would be overly reliant on the judgment and **opinions** of the first officer of flight **861**. Consequently, the Safety **Board** believes that a lack of comprehensive CRM training for the pilots of flight 861 left each **of** them ill-prepared for the proper coordination that was necessary for the flight and **the** attempted approach **to** the Anniston airport.

The investigation revealed that the captain was overly reliant on the first officer during the attempted approach. The CVR transcript indicates that at **several** points during the flight, the captain was unsure of the airplane's location **on** the flightpath; however, in each instance, he accepted the **first** officer's reply **and** did **not** verify the accuracy **of** the response. During **the** attempted approach, at times when the captain mentioned that he should abandon the approach, the first officer **was able to convince the** captain to continue. **These** events indicate that the captain

did not use all of **the** resources available to **him**, such as his experience, **training**, navigational instruments, **or** ATC to determine his best course of action. Based upon these events, it **is** apparent that GP **Express'** CRM program was insufficient in providing the guidance that all resources **should be** utilized to ensure the safety **of** the flight.

The events that resulted in the accident involving flight **861** indicate that the **FAA** needs to provide additional oversight of CRM training programs. The Safety Board **is** aware that the **FAA** has issued advisory circular (AC) 120-51, which provides guidelines for developing, implementing, and evaluating a CRM training program. **This AC** was intended to **be** used **by** the operators. However, the Safety Board believes that such information should be expanded upon and should be used **as** guidance **to** the POIs **to** evaluate the adequacy of air carrier CRM programs under their surveillance.

The Safety Board **is** aware **that** air carriers operating under **14 CFR** Part 135 are not required to have CRM programs. This issue was addressed in the Safety Board's investigation **of the** accident involving Aloha Islandair flight 1712.¹² In its report **on** the accident, the Safety Board issued Safety Recommendation A-90-135, which asked the **FAA** to:

Require that scheduled **14 CFR** Part 135 operators develop and use Cockpit Resource Management programs in their training methodology by a specified date. **(A-90-135)**

In its letter **of** February 8, 1991, the **FAA** stated that it was considering amending the training requirements **of** **14 CFR** 135 **to** include a requirement for CRM training. On May 22, 1991, the recommendation was classified "Open--Acceptable Response," **pending** further information **from** the **FAA**. The Safety Board has been informed **that** a **draft** of a notice **of** proposed rule making (NPRM) on this subject **is now** in the review process within the **FAA**.

Based upon the events that led to **the** accident involving flight 861, **the** **Safety** Board reiterates Safety Recommendation A-90-135 and further believes **that** the **FAA** **should** develop criteria for ensuring that airline CRM training program adequately address crew interaction, decision-making processes, **information** gathering, **flightcrew** communication, and leadership **skills**. Moreover, the **FAA**

¹²Aircraft Accident Report--"Aloha Islandair, Inc., Flight 1712, de Havilland Twin Otter, DHC-6-300, N707PV, Halawa Point, Molokai, Hawaii, October 28, 1989" (NTSB/AAR-90/05)

should provide definitive guidance to **POIs** to urge air carriers to develop CRM programs and **to** enable the **POIs** to evaluate these programs.

2.5 GP Express Management Culture

GP Express **evolved** from GP Air, Inc., a small on-demand air charter service. Its founder **and** past president **remains** Chairman of the Board and **CEO** of the company. **The** company's management included a newly-appointed president, a **director** of operations with extensive experience in major air carrier operations, and a chief pilot well experienced **in the** company's midwest commuter operations.

This mixture of varied experience and operational orientation appears **to** have **been** reflected in different views about proposed operational practices in the **company**. Moreover, the **top** management approach developed **for** a small air charter service does not appear **to** have been well suited to larger, more widely dispersed, scheduled passenger operations. Specifically, the suggestion to provide each pilot with **a set of** approach charts **and** the plan to provide 5 days **for** pilot route familiarization experience prior to starting service in the southern region were rejected **by** the CEO as being unnecessary. Additionally, company management did not express reluctance to hire a pilot with no commuter air carrier experience for **immediate** upgrading to captain. Finally, when faced with an operational need to provide a crew **for** a scheduled flight, management abandoned **an** earlier plan to have the regional chief pilot fly with a newly hired captain and instead, paired the **new** captain with a low-time **first** officer, even though neither **pilot** had previously **flown** these routes, **and** it was the captain's first unsupervised revenue **flight**.

The Safety Board has addressed the issue of the pairing of inexperienced crewmembers on previous occasions. As a result of its investigation of **three** commuter **air** carrier **accidents**,¹³ on October 9, **1986**, the Board recommended that **the FAA**:

Issue **an** air carrier operations **bulletin-part 135**, directing all principal operations **inspectors** to caution commuter air carrier operators **that** have instrument flight rules authorization nor to schedule on the same flight crewmembers with limited experience in their respective positions. (A-86-107)

¹³Op. Cit 6.

The FAA responded by issuing ACOB 87-2, "Commuter Flightcrew Scheduling." This ACOB directed all POIs *to* caution commuter air carrier operators who have instrument authorization not to schedule flight crewmembers with limited experience in their respective positions on the same flights.

Based on the issuance of the ACOB, the Board classified Safety Recommendations A-86-107 "Closed--Acceptable Action" on November 27, 1987.

Also as a result of the same investigations, the Board asked the Regional Airline Association (RAA) to:

Encourage its membership *to* institute a policy of pilot scheduling which would prevent the scheduling on the same flight of cockpit crewmembers with limited experience in their respective positions.
(A-86-122)

The RAA responded by stating that the organization had:

...forwarded ACOB No. 8-88-1 for Part 121 operators and No. 87-2 for Part 135 operators and have recommended to the extent possible that our members develop policies and procedures to implement the scheduling recommendation contained in the ACOBs. In addition, we have recommended each member airline implement a firm company policy that: (1) the PIC make all takeoffs when the weather conditions require the use of lower than standard takeoff minimums; (2) the PIC make all landings when adverse or marginal weather conditions exist.

Based on this response, the Board classified Safety Recommendation A-86-122 "Closed--Acceptable Action" on June 7, 1988.

Further, as a result of its investigation of the November 15, 1987, crash of Continental Airlines flight 1713,¹⁴ on November 3, 1988, the Safety Board recommended that the FAA:

¹⁴Aircraft Accident Report--"Continental Airlines, Inc., Flight 1713, McDonnell Douglas DC-9-14, N626TX, Stapleton International Airport, Denver, Colorado, November 15, 1987" (NTSB/AAR-88/109)

Establish **minimum** experience levels for each pilot-in-command and second-in-command pilot, **and** require the use of such criteria to prohibit the **pairing** on the same flight of pilots who have less than the **minimum** experience in their respective positions. (A-88-137)

On May 30, 1989, the **FAA** responded that it had:

...reviewed **this** safety **recommendation and** determined that in some cases it may not **be** practical **or** possible to schedule **an** experienced **flight crewmember** with **an** inexperienced flight crewmember. For example, a newly **certificated** air carrier may consist of flight crewmembers who are all new to both 14 **CFR** Part 121 operations and to the **type of** airplane they are operating. **Also**, an air carrier may initiate a new kind of operation (e.g., long range international flights or supplemental operations) in which the flight crewmembers **may be** experienced in the **type of** airplane, but have little or no experience in these kinds of operations. **On** January 21, 1988, the **FAA** issued **ACOB** 8-88-1, "Flight Crewmember Experience and Scheduling." **This ACOB** requests that Principal Operations Inspectors bring the issue of scheduling inexperienced flight crewmembers **with** experienced *flight crewmembers* to the attention of their certificate holders, and request that the certificate holders develop policies and procedures **for** establishing, to the extent possible, minimum experience levels when pairing pilots **for** scheduling purposes. **On** July 19, 1988, the **FAA** issued Action **Notice 8430.22** to request that the Principal Operations Inspectors review their certificate holder's policies and procedures to determine what, if any, actions have **been** taken by the certificate holder to implement *the* guidelines specified in the appropriate **ACOB or to** amend **any** existing policies and procedures. The **FAA** conducted a survey of all **U.S.** air carriers following **this** review which showed that 41 percent **of the** 14 **CFR** Part 121 carriers **and** 26 percent **of** the 14 **CFR** Part 135 carriers had policies regarding minimum experience levels when pairing **pilots** for scheduling purposes. The survey also showed that 52 percent **of** the 14 **CFR** Part 121 carriers **and** 12 percent **of** the 14 **CFR** Part 135 carriers had **procedures** requiring the **pilot** in command to make **all** takeoffs **and** landings when either *the* pilot **in command** or second in command **is** inexperienced. **The FAA** believes that **most U.S.** air carriers will develop policies and procedures based upon the recommended

practices and guidelines contained in the ACOB, therefore, in light of the expected degree of voluntary compliance with these scheduling practices, combined with the many air carrier **training** rule making initiatives underway to improve aircrew performance, **the** FAA believes that rule making is unnecessary at this time.

Based on this response, the Safety Board classified Safety Recommendation A-68-137 "Open--Unacceptable Response." The FAA responded again on December 8, 1989, **stating that** it had "asked the joint government/industry task force to establish a committee to provide recommendations to the FAA regarding pilot experience, crew pairing, and associated training requirements."

The Safety Board replied on January 31, 1990, changing the status of the recommendation **to** "Open--Acceptable Response," pending the outcome of the committee's review of the **issues** of pilot experience, training, and crew pairing. The Safety Board has received no further information regarding the committee's review. However, the Safety Board has learned informally that the **FAA** has **an NPRM** in process that will address this issue.

The Safety Board is concerned that **even** after the Board's prompting of the **FAA** and industry representatives regarding **the** need **for** vigilance in assigning crews, the crew **assignments** in the history, Alabama, accident could still occur. The Board believes that the **FAA** should take prompt action **to** require **minimum** experience levels for each pilot-in-command and second-in-command pilot, and to prohibit the pairing of **pilots** who have less than the **minimum** experience in respective positions on the same **flight**. The Board, based on the FAA's lack of action on Safety Recommendation A-88-137, has classified it "Open--Unacceptable Response" **and** reiterates it with this report.

During preparations for starting its new southern operation, the GP Express **CEO** and newly-appointed president made several decisions that, taken individually, **were** less than prudent **from** a safety standpoint, but taken collectively, **they** subsequently created **an** operational situation that seriously jeopardized flight **safety**.

The Safety Board believes that the newly-hired prospective captain's **prior** aviation background and recent FSI training inordinately influenced senior management's assessment of his readiness for immediate upgrading, **and for** commencing line operations as **an** unsupervised captain. The Safety **Board** acknowledges **that** the captain's training and experience as a military pilot in **twin**

turbine-powered helicopters, as an instrument flight instructor and as a general aviation flight instructor, provided a valuable foundation for entry into commercial aviation service. However, this background clearly did not provide him with the consolidation of learning and the familiarity with company aircraft in its commuter operations that are essential to safely conduct a flight as an unsupervised captain in revenue passenger operations.

Had senior **GP Express** management followed the recommendations of its subordinate managers regarding southern region familiarization flights, and had it not abandoned its earlier plan to have the regional chief pilot accompany the new captain on his initial revenue passenger flight, the accident would have been averted.

Accordingly, the Safety Board believes that notwithstanding the fact that **GP Express** was found to be operating in compliance with the applicable FARs and that **FAA** surveillance of its new southern operation was adequate, the decisions made by the company management set the stage for conditions that led to this accident.

26 FAA Surveillance

The Safety Board's investigation and associated public hearing indicated that the **FAA** surveillance of **GP Express** and the airline's preparations for starting service in its new southern region was conducted in accordance with all applicable flight standards directives. The investigation found that the **POI** and the geographic surveillance staff from the Birmingham **FSDO** were timely in their surveillance of the "good will" flights and the first day of scheduled operation, respectively.

Additionally, the experience and training of the captain and first officer of flight **861** exceeded the minimum **FAA** and **GP Express** requirements. The **POI** was informed of the airline's need to hire a pilot directly into a position as captain without any prior experience with **GP Express** or any other airline. As the new hire met all applicable requirements, the **POI** did not participate in this selection. The Safety Board believes that the **FAA's** role in approving the operation to **GP Express** was not causal or contributing to the accident, although there are measures that probably could have been taken to *ha-de* prevented the accident. The Safety Board notes that such preventive measures could not have been achieved by force of the regulations but, instead, would have required the **POI** to persuade the airline to change its operation in the interest of improving safety. Specifically, the **POI** had no authority to require that the captain of flight **861** receive additional **IOE**, to require

regional familiarization flights for the new southern region, **or** to prohibit the pairing of two pilots with relatively little experience on the same flight. At the public hearing, the POI stated that he had tried to convince the airline to change its practices in areas such as these; however, without the authority of regulations **or** other directives, he could only rely on **his power** of persuasion. The Safety Board believes that the company's role in the cause **of** the accident is more pervasive than that of the FAA.

Although **not** related **to** the accident, the **Safety** Board considered the effects of the FAA's **approval** of GP Express' contract training **program** with FSI. The Safety Board believes that such contracted training can provide many benefits, such as uniformity of instruction, access to **more** experienced instructors, and greater resources **to** collect timely aviation information and training aids. Additionally, contract training can be very beneficial to smaller air carriers **as** it allows the airline's senior managers and pilots *to* spend more time supervising the airline.

The Safety Board recognizes that the contract **instructors** are mined by **the** airline on its specific operations and procedures. Additionally, the Safety Board recognizes **that** the contract instructor can have considerable airline flight experience, as was the case **for** the FSI instructor assigned to GP Express. However, **the** Safety Board is concerned **that** the contract pilots that do not have **line** experience with the particular airline may not be able to provide the students with the "insights" on the day-to-day operation **of** the airline and other factors associated with line operations.

The Safety Board believes that the experience that a pilot obtains **as** a first officer in a particular airline is important before upgrading to captain. The Safety Board **does** not believe that a contract instructor, unless he **has** worked with the airline for quite some time, can adequately provide **this** information to a pilot hired directly into a captain's **position**. Therefore, the Safety Board believes that contract training programs should be **augmented** so that pilots hired to be captains receive additional flight instruction pertaining to the operating environment and procedures unique to the airline from an FAA-approved company check airman or instructor.

3. CONCLUSIONS

3.8

Findings

1. **The** airplane was certificated, equipped, and maintained in accordance with Federal regulations and approved procedures.
2. There **was no preexisting** damage **to the** airplane, its systems, or powerplants that contributed to the accident.
3. The flightcrew **was properly** certificated and qualified for their duties according to company procedures and Federal Aviation Regulations.
4. Weather was not a factor in the accident.
5. **It was the captain's** and first officer's first day on duty in GP **Express'** southern region operation.
6. The **captain** and first officer had not flown together prior to **the day of the accident.**
7. The accident occurred on the second trip of the captain's first day **of** unsupervised revenue operation.
8. During the flight, **the** flightcrew lost awareness **of** their airplane's position, erroneously believed that the **flight** was receiving radar services from ATC, and commenced **the** approach from an excessive altitude and at a cruise airspeed without accomplishing the published procedure specified on the approach chart.
9. Per company practice, **the** flightcrew was provided with **only** one set **of** approach charts. a situation that contributed to their lack of situational awareness.
10. **GP Express'** operations **and training manuals** did **not** provide **detailed** information on **stabilized** approach criteria, which, if exceeded, would have required a missed approach.

11. The captain assumed, without comment, that the first officer knew the position of the airplane and did not corroborate the position by his flight and navigational instruments.
12. A reversal of roles occurred during this flight in which the first officer failed to take directions from the captain and the captain was not assertive with the first officer.
13. During his FSI training, the captain had been admonished twice by his flight instructor for not using his first officer as a resource.
14. GP Express' CRM training, as provided by FSI, was inadequate because the captain did not use all of the resources available to him, such as his experience, training, navigational instrumentation, or ATC, and he did not appropriately use the first officer to determine his best course of action.
15. A GPWS would have provided sufficient warning for the flightcrew to have pulled up and overflowed the terrain into which the airplane crashed.
16. The decisions made by GP Express management, specifically, the failure to provide each pilot with a set of approach charts, canceling the pilot route qualification experience prior to starting service in the southern region, and hiring a pilot with no commuter air carrier experience for immediate upgrading to captain, created conditions that led to this accident.
17. The president and chief pilot of GP Express did not consider the possible consequences of pairing a captain and a first officer, with no experience and minimum experience in air carrier operations, respectively, on their first day of duty in the airline's new southern route structure.

Probable Cause

The National Transportation Safety Board determines that the probable causes **of this** accident were the failure **of** senior management **of GP Express** to provide adequate **training and** operational support for the **startup of the** southern operation, which **resulted** in the **assignment of an** inadequately prepared captain with a relatively inexperienced first officer in revenue passenger **service** and **the** failure **of the flightcrew** **to** use approved instrument **flight** procedures, which resulted in a loss **of** situational awareness **and** terrain clearance. Contributing to the causes of **the** accident was GP Express' failure to provide approach charts **to** each pilot **and to** establish **stabilized** approach criteria. **Also** contributing were the inadequate crew coordination and a role reversal **on the part of** the captain and first officer.

4 RECOMMENDATIONS

As a result of its investigation of this accident, the National Transportation Safety Board makes the following recommendations to the Federal Aviation Administration:

Require that all pilots operating aircraft under **14** CFR Part 135 have access to **their own** set of instrument approach charts. (Class II, Priority Action) (A-93-35)

Require that scheduled air carriers operating under **14** CFR Part 135 develop and include in their flight operation **manuals** and training programs **stabilized** approach criteria. The criteria should include **specific limits of localizer, glideslope, and VOR needle deflections** and rates of descent, etc., near the airport, beyond which initiation of an **immediate** missed approach would be required. (Class II, Priority Action) (A-93-36)

Develop guidance and evaluation criteria for Principal Operations Inspectors **to use to ensure that** airline cockpit resource management training **programs** adequately address **crew** interaction, decision-making processes, information gathering, flightcrew communication, and leadership skills. (Class II, Priority Action) (A-93-37)

For airlines that utilize contracted flight and ground training programs, **require that** pilots hired directly to be captains receive additional flight instruction pertaining to the operating environment and procedures unique **to** the airline from **an** FAA-approved company check airman **or** instructor, rather than only from the contractor instructor. (Class II, Priority Action) (A-93-38)

Amend **14 CFR 135.243(c)(2)** to require that the pilot-in-command of a commuter air carrier **flight** that requires two crewmembers have at least 100 **hours** of flight time **or an** equivalent level **of** training in **commuter air carrier operations** requiring two pilots. (Class II, Priority Action) (A-93-39)

Additionally, the Safety Board reiterates Safety Recommendations A-88-137 and A-90-135:

Establish minimum experience levels for each pilot-in-command and second-in-command pilot, and require the use of such criteria to prohibit the pairing on the same flight of pilots who have less than the minimum experience in their respective positions. (A-88-137)

Require that scheduled 14 CFR Part 135 operators develop and use Cockpit Resource Management programs in their training methodology by a specified date. (A-90-135)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

Carl W. Voet
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Vice Chairman

John K. Lauber
Member

Member

John Hammerschmidt
Member

March 2, 1993

5. APPENDIXES

APPENDIX A

INVESTIGATION AND HEARING

1 Investigation

The **Safety Board's Southeast Field Office** in Atlanta, Georgia, was notified of an *aircraft* accident involving **GP Express flight 861** on the afternoon of June 8, 1992. The investigator-in-charge of the accident was dispatched from the Southeast Field Office and a partial *investigative* team was dispatched from the Washington, D.C., Headquarters. The *investigative* team was composed of the following groups: **Operations, Human Performance, Structures, system, and Powerplants**. In addition, **specialist reports** were prepared to summarize findings relevant to the CVR and recovered FAA radar data.

Parties to the field investigation were the FAA, **GP Express Airlines, Inc.**, Beech Aircraft Company, and Pratt & Whitney Canada.

2 Public Hearing

A 2-day public hearing was held in Atlanta, Georgia, beginning on September 30, 1992. Parties represented at the hearing were the FAA, GP Express Airlines, Inc., Beech Aircraft Company, and Pratt & Whitney Canada.

APPENDIX B

COCKPIT VOICE RECORDER TRANSCRIPT

TRANSCRIPT OF A B-D AVIONICS AND INSTRUMENTS COCKPIT VOICE RECORDER S/N A01035 WHICH WAS REMOVED FROM A G. P. EXPRESS AIRLINES, INC., BEECH AIRCRAFT CO. C-99, N118GP, WHICH WAS INVOLVED IN A LANDING ACCIDENT ON JUNE 8, 1992 AT THE ANNISTON AIRPORT, ANNISTON ALABAMA.

RDO Radio transmission from accident aircraft
 CAM Cockpit Area Microphone **sound or** source
 PA Aircraft Public Address **sound or** source
 INT Flight Crew Intercom **sound or** source
 HOT Flight Crew Hot Microphone **sound or** source
 -1 Voice identified as Captain
 -2 Voice identified as First Officer
 -? Voice unidentified
 TWR Atlanta Hartsfield Local Controller (**tower**)
 DEP Atlanta Xartsfield Departure Controller
 CTR Atlanta Center Controller
 APP **Birmingham** Approach Controller
 COMF GP Express Company operations (Atlanta)
 UNK **Unknown** source
 * Unintelligible word
 @ Nonpertinent word
 = Expletive deleted
 % Break in continuity
 () Questionable text
 (()) Editorial insertion
 - **Pause**

Notes: All times are expressed **in** central **daylight** swings time. All times were derived from the **Birmingham Approach** ATC recording. **Only** radio transmissions involving the accident aircraft were transcribed.

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0819151 ((start of recording))

0819:31
CUI-2 okay. exterior's?

0819:34
CM-1 okay, landing light's comin' on.

0819:39
CAM-2 battery * cabin temp * . auto-ignition?

0819:43
CAM-1 **.

0819:45
CUI-1 should be all complete except the ".

0819:46
CAW-2 auto-ignition.

0819:48
CUI-1 auto ignition.

0819:51
CAM-2 and the time we'll be out of here
twenty three. guess Louise.

0820:03
CAM-1 a little late on that, huh.

0820:11
CAM-1 a

0820:12
CW-2 • behind us.

0820:14
CAW-1 wonder if there's any other way you
could of gotten out of here. do we have
any options on our?

0820:16
CAI(-2 negative. no other way.

0820:19
CAM-2 this, get use to this I mean this I I
this doesn't bug me.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0820:22
CAM-2 look at the bright side, with the
hourly pay scale your *.

0820:25
CAM-1 jingle jingle jingle.

0820:27
CAM-2 learn to play the game dude. I mean
it's customer service, there's nothing
we can do about this.

0820:38
CAM-2 90 ahead end get the auto-ignition on
that'll be good,

0820:51
CAM-1 look at that stuff come out of there,

0820:53
CAU-2 yup.

0820:54
CAU-2 okay,

0820:56
CAM-1 so bring the power in, go to idle on
the ah number two cut-off.

0820:59
CAM-2 here it comes, no not cut-off.

0821:03
CAM-1 or ah idle.

0821:04
CAM-2 I know what you mean.

0821:05
CAM-1 you knew what i meant.

0821:11
CAM-1 boy feel that?

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0820:44
TWR Regional Express eight sixty one
runway two seven right taxi into
position and hold.

0820:47
RDO-2 assume the position eight sixty one.

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0821:12
CAM-2

yup, that's why I give 'em plenty of time.

0821:22
CAM-1

okay landing light's, everything is good. We'll be going for nav lights also and strobes once we're in-flight.

0821:28
CAH-2

that's right.

0821:31
CAM-2

everything pretty well matched up. everything's kosher here we go.

0821:34
CAM-1

and we'll climb well above his climb path.

0821:43
CM-1

probably one nine-

0821:52
CAM-2

okay away we go,

0821:56
CAM-2

lights are out. they're on.

0821:58
CAM-2

both of them are on. cool,

0822:01
CM-2

through fourteen. I'll trim out.

0822:03
CAM-1

• thank ya.

0822:10
CAM-2

airspeed's alive through eighty,

TIME &
SOURCE

CONTENT

0821:44
TWR

Regional Express eight sixty one on departure fly heading one nine zero runway two seven right cleared for takeoff.

0821:49
RDO-2

left to one nine zero cleared for takeoff regional eight sixty on thank you.

INTRA-COCKPIT COMMUNICATION

TIME & SOURCE

CONTENT

0822:16
CAM-2 there's Vee one.

0822:19
CW-2 and two.

0822:21
CAM-2 atand-by there's blue.

0822:24
CAM-2 positive rate.

0822:28
CAM ((sound of trim-in-motion beeps))

0822:51
CAM-2 bring It back a little bit more--.

0823:22
CAM-1 altitude?

0823:23
CAM-2 four thousand.

0824:11
CAM-1 climb check please.

AIR-GROUND COMMUNICATION

TIME & SOURCE

CONTENT

0822:36
TWR Pee correction Regional Express
 eight sixty on turn left heading
 one niner zero contact departure.

0822:40
RDO-2 left to one ninety going to
 departure olght aixty one good day.

0823:55
RDO-2 Atlanta departuro good morning
 Regional Express# eight sixty ono's
 with ya one nine zero on the heading
 out of two point four for four
 thousand.

0824:01
DEP Re lional Express eight sixty one
 Atlanta departure good morning radar
 contaot maintain four thouaancl.

0824:06
RDO-2 four thousand eight aixty one.

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME C
SOURCE

CONTENT

0824:13
CNI-2 gear and flaps?

0824:14
CAN-1 and ah they're up.

0824:16
CAM-2 power props?

0824:19
CAN-1 they're set.

0824:20
CW-2 prop sync?

0824:21
CAM-1 comin' on.

0824:22
CAM-2 engine gauges?

0824:27
CAM-1 checked.

0824:29
CAM-2 water-meth didn't use. auto-feather?

0824:30
CAM-1 auto-feather's off. they're both
workin' again.

0824:35
CAM-2 yup.

0824:37
CAM-2 somthin' must just been doin' drugs on
us this morning. okay, lights?

0824:42
cm-1 taxi off. strobe's on.

0824:46
CAM-2 battery'. still given us fits. and
we're climbin'.

0824:51
CAM-2 comin' up on a thousand to go your
side.

TIME &
SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0827:31
CAM-2 cruise power. props?
0827:32
CAM-1 set.
0827:33
CAM-2 engine gauges?
0427:35
CAM-1 checked.

TIME 6
SOURCE

CONTENT

0826:05
DCP Regional Express eight sixty one
turn right heading two six zero.
0826:08
RDO-2 right to two six zero eight sixty
one,
0826:16
RDO-2 hello Atlanta GP Express eight sixty
one .
0826:24
COMP GRA eight sixty one go ahead.
0826:27
RDO-2 yeah ah are we suppose to give you
our out times?
0826:30
COMP please pretty please.
0826:32
RDO-2 okay ah since you talked me into it
how's one two five five and one
three two three sound to ye.
0826:40
COMP okay one two five five and one three
two three.
0826:45
RDO-2 that's right, they're stacked up out
here. talk to you later .
0826:48
COMP have a good one.

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0821:31
CAM-2

battery?

0827:42
CAM-1

Off, 1'11 leave it Off.

0821:45
CAM-2

sounds good. interiors exteriors?
Interiors are on. exteriors?

0827:47
CW-2

you can kick the landing lights off
that's what we do. you know your call
when ever you want to turn 'em off.

0821:32
CAW-1

okay we'll get a little ways away from
here anyway.

0821:51
CAW-2

okay I'm gunna turn this off.

0830:42
CAM-1

did you make the station call?

0830:44
CAM-2

yeah I already did that.

0830:45
chn-1

okay.

TIME 6
SOURCE

CONTENT

0828:10
DEP

Regional Express eight sixty one
climb and maintain five thousand fly
headin' two seven zero.

0828:18
RDO-2

we're out of four for five thousand
two seven zero on the heading eight
sixty one.

0830:21
DEP

Regional express eight sixty one fly
headin' two eight zero.

0830:35
RDO-2

goin' right to two eight zero ah
eight sixty one we're level five
thousand.

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0830:46
CAM-2

all set.

0834:13
CAM-2

I suggest why don't we turn e little
bit I'm punna ask him a little bit
southward for weather. this isn't too
bad but ah.

0834:21
CM-1

see how bumpy it is when we get up
there.

0834:24
CAM-2

what's that?

0834:45
CAM-1

does it give you level one through six
or just tell you it it's level three or
greater?

0834:47
CAM-2

I can- just a second.

0034:33
CAM-2

I'm writin' up this damn Intercom.
okay what did you say again?

0834:37
CAM-1

ah it only flashes if you're level
three or greater right?

0834:39
CM-2

right so you know I'm I'm not worried
unless you are I mean.

0834:43
CAM-1

I just soon go through we're already
bshind.

0834:45
CAM-2

cool with me I mean cause I mean
that's what I thought.

TIME &
SOURCE

CONTENT

0033:17
DEP

Regional Express eight sixty one
climb and maintain sin thousand.

0833:21
RDO-2

we're out of five for six thousand
at this time now ah eight sixty one.

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0834:47
CAM-2 look's like probably nothin' after it.

0835:22
CAM-2 comin' up on a hundred to go your
side.

0835:43
CAM-2 thoro you go.

0835:56
CAM-1 should bo out of this in a minute.

0835:58
CAM-2 yeah.

0836:02
CAM-1 actually it's pretty smooth in here
isn't it.

0836:21
CAM-2 feels kinda good.

0836:24
CAM-1 does this vector intercept an airways?

0836:29
CAM-2 comin' in locks like comin' in real
slow that's probably what he's doin',

0838:21
((Atlanta Center Controller started to be heard on the radio channel))

0839:13
CAM-2 amazing when you get tho bug smashers
out they can't talk.

0839:24
CAM-2 how would he know.

0839:38
CAM-2 geeat Louise.

AIR-GROUND COMMUNICATION

TIME 6
SOURCE

CONTENT

0838:08
DEP Regional Express eight sixty one
contact Atlanta center one thirty
four ninety five good day.

0838:18
RW-2 one thirty four ninety five good day
sir.

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0839:43
CAM-2 I think we got a sucker hole on the radar.

0839:52
CAW-2 yeah you're okay.

0840:07
CAN-2 this guy's pissin' off.

0841:44
HOT-1 that's Talladega?

0841:54
INT-2 okay ah -- thirty two miles out.

0842:03
INT-1 does he want us to resume own navigation?

0842:09
INT-2 ah.

0842:10
INT-1 I heard him say that. as far as I'm concerned I'm still on vectors two eight zero.

0842:13
INT-2 yeah two eight zero's fine. because we're on course anyway so let's just hold it.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0840:53
RDC-2 Atlanta Center Regional Express eight sixty one's with ye six thousand.

0840:57
CTR Regional Express eight sixty one Atlanta center roger descent pilot. discretion maintain five thousand.

0841:04
RDC-2 *PD* to five thousand ah we're out of nix et this time ah sight aixty one.

0841:10
CTR eight aixty one roger --,

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0842:18
INT-1 yeah but we're slowly drifting off.

0842:22
INT-2 ah but turn that zero eight five to
 the course.

0842:28
INT-1 What's the course?

0842:29
xtii-2 zero eight five inbound.

0842:32
INT-1 you mean zero six five?

0842:33
INT-2 zero eight five.

0842:38
INT-2 zero eight five.

0842:39
INT-1 thbn we're way off course.

0842:43
INT-2 east is zero nine zero.

0843:03 ((Birmingham Approach Controller was started to be heard on the radio))

0843:05
INT-2 you want to do the approach?

0843:07
INT-1 yes -- and in-range.

0843:10
INT-2 atand-by.

0843:16
INT-2 there's cur altitude. comin' up on it.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0842:44
CTR Regional Express eight sixty one
 radar service is terminated contact
 Birmingham approach one two five
 point four five.

0842:52
RDO-2 one two five point four five for
 Birmingham ah so long

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0843:18
INT-1

okay.

0844:26
INT-1

okay.

0844:27
IWT-2

I'm gettin' you all dialed in standby.

0844:32
INT-2

the outer marker is located in there
there's you marker beacon is ah it's on.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0843:19
RDO-2

Birmingham approach good morning,
Regional Express eight sixty one's
with ya five thousand..

0843:25
APP

Regional Express eight aixty one
Birmingham roger ah standby just a
moment.

0843:42
APP

Regional Express eight sixty one
descend and maintain four thousand
and ah continue direct Talladega If
you're unable to get tho ah Anniston
airport in sight, expect ah no delay
for the ILS five from over Bogga.
There is an area of weather
southwest of Bogga on the final
a proach course about ah four to
five milos. Anniston's reporting
fifteen hundred scattered estimated
ceiling one zero thousand broken
visibility five with light rain fog
and haze the wind is zero six zero
at six altimeter three zero zero
six.

0844:13
RDO-2

okay we're out of five thousand at
this time for four thousand for the
possible visual and ah If we don't
see it we'll lot you know for the
ILS eight sixty one thank you.

0844:38
RDO

((sound of beacon test tone)),

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0844:42
IWT-1
okay right now we're trackin' direct
to the Talladega VOR.

0844:45
INT-2
that's correct.

0844:51
INT-2
there's our area of weather -- so --

0845:00
INT-2
five hundred to go.

0845:13
INT-2
geese Louise.

0845:15
INT-1
this is fun.

0845:21
INT-1
in-range call's complete?

0845:22
INT-2
dh standby.

0845:24
INT-1
in-range checklist.

0845:25
INT-2
how much fuel?

0845:28
INT-2
how much?

0845:29
INT-1
4h you mean ah fuel?

0845:31
INT-2
how much fuel are we goin' to have?
twelve hundred?

0845:32
INT-1
in with ah twelve hundrad. out with
twelve hundred.

0845:34
INT-2
okay ah ha light.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0845:50
RDC-2

Anniston Base eight sixty one.

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0846:25
PA-2

ah folks we're starting our descent into Anniston like to ask that you double check to see if your seat belt is fastened for landing at thfs time and any carry-on that you may have brought with you is a stowed beneath the seat in front of you thnk you.

0846:37
INT-2

okay anyway in-range is complete. basically what they didn't reply hut what I told me to do is she couldn't hear us. Is these radios are so poor that they were give that I just broadcasted in the blind and they were goin' to monitor for us but anyway station call is done cabin sign I just did. the passenger brief I gat. altimeter he gave us. windshield anti-ice we don't need. crew briefing ah if we don't get the visual here in a few miles we'll do the ILS if we have to. and exteriors?

0847:12
INT-1

okay landing light's ah-.

0847:13
INT-2

there you go,

0847:14
INT-1

comin' on just turn them on and taxi.

0847:17
INT-2

okay, Taxi won't do you any good until the gear comes down.

0847:20
INT-1

that'a okay. it's on.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0846:02
RDO-2

Anniston base eight sixty one
assurin' you can hear us but we
can't hear you. we got three people
for ya, one goin' through to
Tuscaloosa twelve hundred in and out
on the fuel see you in oh about oh
five minutes.

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

TIME &
SOURCE

CONTENT

0847:21
INT-2

no problem.

0841:26
INT-1
0847:29
INT-1

I didn't know that though.

and let's see.

0847:32
INT-1

and ah you've got everything set up
that you can except the localizer
frequency right.

0841:36
INT-2

yeah for you and I'll get 'er in there
for you.

0847:38
INT-1

and in-bound course is?

0847:39
INT-2

ah I'll wet it with my heading bug but
I believe it's ah zero four nine so.

0847:45
INT-1

zero four nine inbound.

0847:46
INT-2

I'll just --,

0847:46
ADP

Regional express eight sixty one the
now Anniston weather seven hundred
scattered estimated ceiling one
thousand five hundred broken nine
thousand overcast three miles fog
and haze. the seven hundred foot
layer is ah scattered variable so
broken appears to be breaking up.
the wind is zero nine zero at five
altimeter three zero zero six

0848:05
RDO-2

eight sixty one thank ya.

0848:09
HOT-2

you want--.

0848:10
INT-2

you want to 90 around for the ILS?

INTRA-COCKPIT COMMUNICATION

TIME C
SOURCE

CONTENT

0848:19
INT-1

*

0848:23
INT-1

ask him distance from -.

0848:26
INT-2

from Bogga?

0848:27
INT-1

that's okay I'll 'just.

0848:28
INT-2

we're ah. minus six point one. we're
five miles from Bogga.

0848:31
INT-2

go ahead and slow on up.

0848:37
INT-2

there you go keep the shiny side up.

0848:39
INT-1

Ah -.

0848:40
INT-2

there you go should have moved your
heading bug here you go I'll get you
set in here.

0848:44
INT-1

okay let's go approach flaps.

0848:46
INT-2

speed checks comin' now.

0848:49
INT-2

didn't realize that your going to get
this much on your first day did ya.

AIR-GROUND COMMUNICATION

TIME C
SOURCE

CONTENT

0848110
APP

and A eight sixty one proceed
direct Bogga maintain four thousand
'til Bogga cleared localizer run- or
ILS runway five approach.

0848:19
RDO-2

direct direct to Bogga four thousand
And cleared for the ILS runway five.
eight aifty one thank you

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0848:51
CAM (sound of trim-in-motion beep)

0848:53
INT-1 well it's all kind of ganged up here
on me a little fast.

0849:02
INT-1 got the localizer in?

0849:03
INT-2 workin' on It.

0849:06
INT-1 think we're goin' to go through It.

0849:08
INT-2 ah I'm goin' to kill somebody about
these radios I can't get your frequency
set.

0849:20
INT-2 there you go.

0849:21
INT-1 yup went through It

0849:24
INT-2 can you go around for it?

0849:26
INT-1 I bet you. I think we're right over
the outer-.

0849:28
INT-2 we're rlight over Bogga. He kept us In
real tight I moan God we're we're
four and a half out that was uncalled
for go ahead nnd drop your gear speed
checks.

0849:43
INT-1 glide slope isn't evan alive.

0850:00
INT-1 what's tho minimum altitude I can
descend to 'til I'm established?

0850:03
INT-2 'til established. twenty two hundred.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

0850:41
INT-2 okay here it comes

0850:46
INT-2 I'm thinkin' .

0850:53
INT-1 ah we gotta go missed on this.

0850:55
INT-2 just a minute " there you go " there
 your gunna' shoot right through it
 again " there you go see.

0851:08
INT-2 that's why I waq kid' wonderin' you
 know hay.

0851:12
INT-2 okay we gettin' in close keep 'er
 goin'.

0851:16
INT-2 you're okay.

0851:17
INT-1 hopin' no one on here's a pilot.

0851:20
INT-2 well one guy pot. on with a helmet bag.

TIME &
SOURCE

CONTENT

0850:06
APP Regional express eight sixty one
 that ah weather's south of ah a
 Bogga is moving northbound end the
 leading edge appears to be about two
 miles southwest of Bogga.

0850:18
RDO-2 eight sixty one thank you very much
 we're out of four thousand for the
 localizer at this time and we're
 inside of Bogga.

0850:23
APP yes sir and advise procedure turn
 inbound.

0850:28
RDO-2 6h procedure turn inbound complete.

INTRA-COCKPIT COMMUNICATION

TIME &
SOURCE

CONTENT

0851:23
INT-2
okay there you go. roll out. you're
kosher.

0851:26
INT-2
see you you had about a ninety degree
intercept there I was kind.' like whoa.

0851:30
INT-2
through twenty two we're **.

0851:31
INT-1
okay we're on our way.

0851:33
INT-1
there's the glide slope.

0851:34
INT-2
okay watch your airspeed. one fifteen
on the airspeed.

0851:36
INT-2
we're inside through twenty two we
can continue our descent on down.
we're way high.

0851:43
INT-1
okay is the glide slope working?

0851:45
INT-2
nope I'm not gettin' any.

0851:48
INT-2
so with no glide slope, we're down to
eleven hundred.

0851:50
INT-1
you got your right frequency in there?

0851:51
INT-2
five hundred - one eleven five double
ohock yup.

0852:13
INT-1
what's our missed approach point now?

0852:15
INT-2
missed approach at the middle marker
ah-.

AIR-GROUND COMMUNICATION

TIME &
SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

TIME &
SOURCE

TIME &
SOURCE

CONTENT

CONTENT

0852:20
INT-2

eleven hundred but we need to add a
hundred so twelve hundred.

0852:24
INT-2

comin' up.

0852:25
CAM

((sound of impact))

0852:25.5

end of recording