PB92-910404

National Transportstion Safety Board Aircraft Accident/Incident Summary Report: Controlled Flight into Terrain Bruno's Inc. Beechjet, N25BR, Rome, Georgia, December 11, 1991

(U.S.) National Transportation Safety Board, Washington, DC

8 Jul 92

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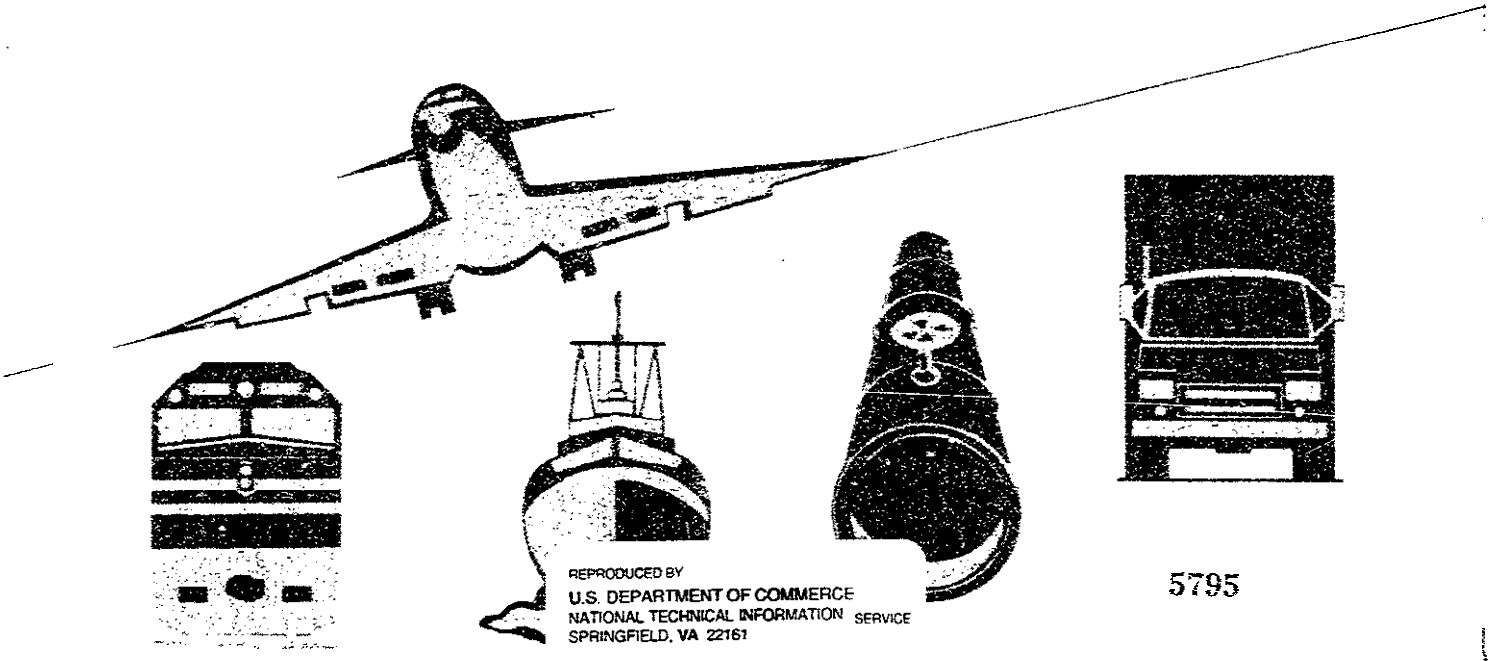
NTSB/AAR-92/01/SUM

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

AIRCRAFT ACCIDENT/INCIDENT SUMMARY REPORT

CONTROLLED FLIGHT INTO TERRAIN
BRUNO'S INC., BEECHJET, N25BR
ROME, GEORGIA
DECEMBER 11, 1991



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DECEMBER 11,1991

Adopted: July 8, 1992
Notation 5795

Abstract: This report explains the crash of N25BR into mountainous terrain near Rome, Georgia. The safety issues discussed include the policies and procedures in corporate flight operations, the role of the first officer in corporate flight operations, and the use of ground proximity warning systems in FAR Part 91 operations of turbojet-powenxi airplanes.

National Transportation Safety Board
Washington, D.C. 20594

AIRCRAFT ACCIDENT/INCIDENT SUMMARY

Accident No:	DCA-92-MA411
Airplane Owner and Operator:	Bruno's Inc.
Airplane Type:	Be 400, Beechjet, N25BR
Location:	Rome, Georgia
Date and Time:	December 11,1991,0940 est
Injuries:	9 fatal
Type of Occurrence:	controlled flight into tenain

1. THE FLIGHT

On December 11, 1991. around 0820 eastern standard time, N25BR, a Beech Aircraft Corporation Be 400 Beechjet, owned and operated by Bruno's Inc., a chain of supermarkets and related stores based in Birmingham, Alabama, landed at the Richard B. Russell Airport near Rome, Georgia, after an uneventful flight from Birmingham. The airplane, operating under 14 Code of Federal Regulations (CFR) Part 91. General Operating and Flight Rules, was transporting two flight crewmembers and seven passengers. The passengers, executives of Bruno's and another company, wen OR an annual Christmas tour of Bruno's facilities. After the Rome stop. the passengers wen to be flown to Huntsville, Alabama, where they were to be driven to 11 Bruno's facilities located between Huntsville and Birmingham.

After the passengers disembarked at Rome, the pilots remained near the airplane. Witnesses at the airport reported that the 'pilots appeared alert and friendly. The captain filed an instrument flight rules (IFR) flight plan with a Federal Aviation Administration (FAA) Flight Service Station for the approximately 80 nautical mile flight to Huntsville and the return to Birmingham. He estimated that the airplane would depart Rome at 0915, the flight would take I5 minutes. and the airplane would carry sufficient fuel for 2 hours of flight. Because the airplane had been fully fueled at Birmingham, no additional fuel was added at Rome.

The passengers returned to the airport about 0925. According to the driver of one of the two vehicles that transported the passengers to the airport, several passengers had discussed the possibility of seeing from the air a potential site for a Bruno's facility in Rome. Employees at the Rome fixed base operator (FBO) overheard several passengers comment about trying to maintain a schedule. One passenger reportedly told another that there was no time for him to browse at the shop in the FBO because the flight had to depart quickly. According to the witness, the passengers "seem(ed) to leave . . . hurriedly at this remark" to board the airplane.

The cockpit voice recorder (CVR)[1] transcript indicated that the airplane's engines were started at 0930. Shortly thereafter, the captain told the first officer that given the prevailing weather conditions, "We could run out under the edge but there's no edge anymore." The flightcrew taxied the airplane and commenced takeoff on runway 1 at 0937 under visual flight rules (VFR). Comments by the pilots revealed that the first officer was the pilot flying. No reference was made by either pilot to a checklist or a pretakeoff and departure briefing. In addition, no reference was made by either pilot to a sectional chart used for navigation under VFR.

At the time of takeoff, the weather, as measured by the automated weather observation system at the airport, was reported as 1,000 feet overcast, visibility 10 miles, and altimeter 30.33 inches of Hg. The level of the cloud ceiling obscured the tops of nearby terrain that exceeded 1,600 feet mean sea level (msl) elevation.

At 0937:13, the captain contacted the Atlanta Air Route Traffic Control Center (Atlanta Center) informing them that the airplane had just departed Rome, was flying under VFR, and was "looking for a clearance over to Huntsville." Atlanta Center gave the crew a transponder identification "squawk" code and told them to maintain VFR because "we have traffic four and five right now southeast of Rome. [We will] have something for you later." At 093914, Atlanta Center asked the crew to state their altitude. The response was, "We're at thirteen hundred VFR, just southwest of Rome Airport." At 0939:39, the captain advised the first officer, "We're gonna have to get away from that mountain down there pretty

[1] The airplane was equipped with a Fairchild model GA100 CVR, in accordance with the requirements of 14 CFR 91.35(d), a regulation that took effect on October 11, 1991. The regulation requires all turbine-powered airplanes and rotorcraft that need two pilots for flight and have six or more passenger seats to be equipped with a CVR providing a minimum of 15 minutes of audio information.

soon." He 'then told the first officer, at 093952, "You're getting close. You're gonna [have to] go to the right." The first officer responded that he could not "see over there." The captain then stated that if they maintained their present course, they could run into an airplane on approach to Rome. The captain also pointed out that there was a mountain in one direction and an antenna in another that would be hidden by the fog.

The first officer then asked the captain if he should "just punch up," [fly through the cloud layer to reach visual conditions, without air traffic control (ATC) clearance]. Since the airplane had arrived at Rome about an hour before this flight, the pilots would have been aware of the approximate altitude of the tops of the clouds. The tops were about 2,000 feet msl, according to a pilot who had landed in Rome about the time of the accident. The captain told the first ufficer not to fly through the cloud layer because of their proximity to the airplanes that were on approach to Rome.

At 0940:07, the captain directed the first officer to fly "back to the right." At this point, the CVR transcript indicates that the pilots recognized that the airplane was close to obscured terrain. The CVR stopped recording at 094055. At 0941:21, Atlanta Center attempted to contact the airplane but that attempt and all subsequent attempts were unsuccessful.

At 1033, a person notified the airport that he had seen a plume of smoke near the 1,701-foot msl summit of nearby Mt. Lavender. Shortly thereafter, airport employees informed rescuers of this information. Rescuers located the wreckage of the airplane and found that the airplane was destroyed and all nine passengers and crew had been killed.

The accident was nonsurvivable because of the high impact forces. Post-mortem examinations of the passengers and crew showed that all were killed by blunt force trauma associated with the accident. Toxicological examinations of the crew showed no evidence of licit or illicit drugs.

2 AIRPLANE AND RELATED INFORMATION

The airplane was acquired new by Bruno's, Inc., in April 1989. It was a pressurized turbojet, requiring a two-person crew and equipped with two Pratt & Whitney of Canada JT15D-5A turbofan engines rated at 2,900 pounds of thrust, Collins analog flight instruments, a Sperry Primus color radar? and a radio altimeter. It was not equipped, nor was it required to be equipped, with a ground

proximity warning system (GPWS). The value of a similarly equipped Be 400 was estimated at $3.9 million.

The wreckage parh was about 100 feet wide and 450 feet long. It was oriented on a heading of 0250, on a 290° bearing from Rome, at the 1,580-foot level of the south side of Mt. Lavender, at coordinates 34°18'52" north latitude, and 85°17'25" west longitude. The airplane had been subject to considerable destructive forces, and aircraft structure, cockpit controls, instruments, and avionics were found in fragments along the wreckage path. Continuity of any control system could not be established.

The left engine was found about 350 feet from the initial impact point, facing a 45° magnetic heading, and the right engine was found about 150 feet below and 50 feet to the left of the left engine. Engine fan blade damage was consistent with the generation of thrust at impact. In addition, thrust reversers of both engines were found stowed and locked. Despite the extensive destruction, all major components of the airplane were located. The wreckage did not reveal evidence of preexisting airframe, system, or powerplant malfunction.

The CVR began at 0808:16 when the airplane was inbound to Rome, stopped when the airplane was parked in Rome, began with engine start, and ended at impact at 0940:55.[2] No unusual airplane-related sounds or crew comments associated with any airplane abnormality were present on the CVR. After takeoff, all statements made by the crew were related to the airplane or to the flight. Federal Aviation Regulations (FARs) did not require the Be 400 to be quipped with a flight data recorder, and N25BR was not so equipped.

The Safety Board does not find the airplane to be a factor in this accident. At the time of the accident, it was fully certificated and maintained in accordance with the applicable regulations of 14 CFR Part 91 and was fueled and loaded within its appropriate weight and balance limitations.

3. THE PILOTS

The captain was born on May 27, 1932. He possessed an airline transport pilot (ATP) certificate, issued on March 31,1989, with the ratings and limitations of airplane multiengine land, commercial privileges airplane single engine land,

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[2] Safety Board investigators listened to the entire 32-minute recording. However, only that portion that began at Rome with engine start and ended at the time of impact was transcribed.

and MU-300/ Be 400 type ratings. His most recent FAA medical examination was on April 8, 1991, and he was issued a first-class certificate with the requirement that he wear corrective lenses for distant vision and possess corrective lenses for near vision while acting as a pilot.

The captain had been employed as a pilot for a company that owned a chain of supermarkets that was purchased by Bruno's in July 1388. At that time, the chain operated a Beech King Air 200. In early 1989, when Bruno's ceased operating the King Air and acquired N25BR, the captain successfully transitioned to the BE 400 and became its pilot-in-command.

He received his initial and all recurrent Be 400 flight training at the facilities of Flight Safety International. His initial training included 3 hours in a cockpit procedures trainer, 24 hours in a flight simulator, and 3 hours in the airplane. His most recent recurrent training was accomplished in January 1991. Because Safety Board investigators were unable to locate the pilot logbook that the captain had been using at the time of the accident, his flight experience was estimated from data available in an earlier logbook, and from Bruno's records of the airplane. At the time of the accident, the captain had accrued an estimated 16,350 total flight hours, about 11,550 hours in multiengine airplanes and about 850 hours in the Be 400, all in N25BR. The data indicate that both the captain and first officer had flown into Rome once before the accident, on December 5,1990.

Records of the captain's training at Flight Safety International showed no training or performance difficulties. His FAA airman records showed no violations, accidents, or incidents during his piloting career. Similarly, the National Driver Register showed that the captain's driver's license had not been suspended or revoked, and the National Crime Information Center revealed that the captain had no arrest record.

The captain was reported to have enjoyed his employment with Bruno's and flying in general. Pilots who had flown with the captain before his employment with Bruno's commented favorably on his flight operating practices. Those who knew the captain told Safety Board investigators that the captain did not feel pressured by Bruno's to engage in unsafe flight operating practices. He had mentioned to a close acquaintance that he believed that the first officer occasionally paid unnecessary attention to checklists. He said that he did not believe that it was necessary to read the airplane checklist verbatim since he had considerable experience in the airplane.

Several pilots who had flown with the captain during his employment at Bruno's had observed him performing what they considered questionable practices. One pilot noted that the captain did not conduct departure briefings and, on occasion, would fly through or very close to thunderstorms. The captain was also observed to fly below decision height without having the runway or its associated lighting or markings in sight. A pilot, who had flown as first officer with the captain, believed that the captain did not have a complete understanding of FARs. He saw the captain cancel his IFR flight clearance and descend through clouds to locate an airport, and, on another occasion, he saw the captain descend below decision height before identifying the runway. Another pilot said that the first officer told him that the captain had occasionally flown wit5 less than the minimum required fuel load on board the airplane.

The first officer was born on May 2, 1964, and was hired by Bruno's in July 1988 as a copilot on the Beech King Air *200.* He possessed an ATP certificate, issued on January 27, 1991, with the ratings and limitations of airplane multiengine land, commercial privileges airplane single-engine land, and MU-300/Be 400 type ratings. His most recent training in the Be 400 was in January 1991. On April 8, 1991, he received his most recent FAA medical examination, and he was issued a first-class certificate with no limitations or restrictions.

The first officer was estimated to have accrued about 3,100 total flight hours, of which about *850* hours were in the Be 400, all in N25BR. Records pertaining to the first officer revealed no training or performance difficulties, FAA enforcement actions, driver's license suspensions, or arrests.

The first officer was highly regarded by pilots who had flown with him. They described him as a serious pilot who "went by the book." According to family members and fellow pilots, the first officer disapproved of aspects of the captain's piloting. Independently, several pilots and family members told Safety Board investigators that the first officer had told them that he had complained to an executive of Bruno's that the captain was operating the airplane in violation of FARs and in disregard of good operating practices. According to them, the executive did not support the first officer and told him that he was satisfied with the performance of the captain. When questioned by Safety Board investigators, the executive denied having received such complaints from the first officer. Several of the pilots said that the first officer had discussed with them the possibility of anonymously reporting the captain's alleged rule violations to the FAA. However, he was described as reluctant to report the captain because, as first officer with the captain when the violations were alleged to have occurred, he

feared the FAA could then charge him with violating a rule. Moreover, if he was to be considered for employment as a pilot with an airline, an apparent goal of his, he was concerned that he might be rejected in reprisal for reporting a fellow pilot to the FAA.

Interviews with immediate family members of the captain and first officer did not disclose activities that were disruptive to a consistent sleep/rest routine in the 3 days before the accident. Both of them retired and arose at times that should have provided sufficient rest.

4. AIR TRAFFIC! CONTROL

The Safety Board concludes that air traffic control (ATC) was not a factor in this accident. All ATC communications with the airplane were in accordance with applicable FAA rules and procedures. All navigational aids pertinent to this flight were operating normally, and all communications between the airplane and ATC were routine.

Atlanta Center could not expeditiously provide the airplane with a clearance when requested because the Rome airspace was occupied by two other aircraft that were on or about to begin instrument approaches. Because of the limitation of the Center's sector radar to locate aircraft below its line of sight, Atlanta Center could not locate and identify on its radar any of the three aircraft that were at or near Rome. Since FAA rules prohibit controllers from providing clearances to aircraft unless adequate separation is assured, the clearance could not have been issued to the airplane until the Center controller was certain that the other two aircraft had either landed or departed the airspace.

5. SELECTION OF THE TYPE OF CLEARANCE

The captain elected to depart Rome under VFR at a time when, as he h e w or should have known, the ceiling obscured the tops of nearby terrain in all quadrants, leaving only a few miles in all directions in which he could legally and safely fly VFR. After departure, the crew attempted to avoid the two aircraft that were on approach to the Rome airport while attempting to remain clear of the clouds and the terrain. Given the hazards that the obscured terrain and the hidden aircraft presented, the most prudent course of action the captain could have selected after departure would have been to return to the airport. Continuing flight in such conditions only exacerbated his initial mistake of departing VFR before attempting to obtain a clearance.

If the captain had requested an IFR clearance from the Rome airport to Huntsville, ATC rules would have mandated that the airplane depart within a specified 5-minute period. However, if the passengers did not return in time to allow a departure within this period, the clearance would then have been voided. If the captain had then attempted to obtain a second clearance from Rome, it is likely, because other aircraft were present in the non-radar environment, that he would have encountered a delay possibly as long as 30 minutes. Therefore, the captain may have believed that the only alternative available to quickly leave Rome was to depart under rules that would not have required a departure clearance, i.e., VFR, attempt to proceed to Huntsville, and receive the clearance once aloft.

Given his awareness of the passengers' busy schedule, this explanation appears to characterize the actions of the caption. In fact, the airplane took off 22 minutes after the departure time the captain had given when he filed the IFR flight plan, just over 10 minutes after the passengers had returned to the airport.

The Safety Board did not find evidence that the captain attempted to overfly Bruno's facilities near Rome, or that he was pressured by the passengers to depart when they returned to the airport. He may have sought only to facilitate, to the extent that he could, the passengers' adherence to a schedule that called for 11 site visits after landing at Huntsville. However, the Safety Board believes that, given the terrain and the meteorological conditions, the captain should have been willing, in the interests of safety, to forego flexibility in the departure time and request an IFR clearance to depart from Rome. The CVR indicates that the captain intended to fly just below the cloud layer until they could obtain the requested clearance. This type of flight operation, commonly referred to as "scud running," is a highly dangerous type of operation in any environment, particularly a mountainous environment.

The Safety Board found no evidence to indicate that the crew was using a sectional chart. The Safety Board believes that the lack of a pertinent sectional chart further compromised the crew's ability to operate the airplane safely in the existing meteorological conditions. Comments on the CVR indicated that neither crewmember was aware of the location of terrain and their proximity to it during the flight. Given the low ceilings and the high terrain, the Safety Board believes that both crewmembers failed to demonstrate good operating practice by attempting to circumnavigate obscured terrain without a sectional chart.

6. CORPORATE FLIGHT OPERATIONS

Because corporate officials may have little knowledge and understanding of the need for rigorous adherence to FARs, they depend on company pilots to maintain standards of flight safety. With little FAA oversight of flights operating under 14 CFR Part 91, corporate flight operations such as Bruno's, where the two pilots were the only corporate employees dedicated to aviation, often depend on the pilots' knowledge and interpretation of the FARs to provide a safe foundation to guide operations, training, and maintenance.

The captain's behavior on this flight, and the statements made to Safety Board investigators, suggest that on occasion he did not employ good operating practices. Moreover, the evidence indicates that the first officer recognized this and attempted, unsuccessfully, to draw the attention of Bruno's management to the alleged practices. However, a Bruno's executive denied that the first officer had spoken to him in this regard.

In situations where a junior flight crewmember, who is attempting to gain experience in sophisticated aircraft, is not supported by the corporate management in attempts to improve flight safety, that crewmember has few avenues available in such attempts other than to leave the corporation, and as a consequence, possibly risk delaying or giving up long-term piloting aspirations. The Safety Board believes that, to encourage adherence to good operating practices among pilots of corporate-owned or -operated aircraft, and to enhance the ability of first officers of corporate aircraft to participate in the management of the cockpit, the FAA should, in conjunction with professional aviation associations and manufacturers of turbine-powered aircraft, inform corporate aircraft operators of the circumstances of this accident, and encourage them to examine their flight operations to verify that policies and procedures are established to prevent such accidents and to encourage first officers to play an active role in cockpit decision-making. The Safety Board also believes that, to assure as wide a distribution as possible to the corporate aviation community, the National Business Aircraft Association should also inform corporate aircraft operators of the circumstances of this accident, and encourage them to examine their flight operations to verify that policies and procedures are established to prevent such accidents and to encourage first officers to play an active role in cockpit decision-making.

7. GPWS

The number of accidents of this type, in which an airworthy aircraft is flown into terrain under controlled circumstances in instrument conditions or in darkness, has been reduced in recent years in air transport operations, largely because of the aural warnings of imminent ground collision provided in the cockpits of air carrier airplanes by the currently required ground proximity warning system (GPWS).

According to data supplied by the U.S. manufacturer of the GPWS, given the flight profile of the airplane in this accident., the warning would have sounded about 12 seconds before it struck Mt. Lavender. Thus, despite the fact that the meteorological conditions and the terrain posed a threat to the safety of VFR flight that effectively proscribed the VFR departure of the airplane from the airport, a GPWS would have provided the pilots sufficient time to have taken action to avoid the terrain. This action could have been either an abrupt increase in altitude, thereby requiring the pilots to violate FARs by entering instrument meteorological conditions without an IFR clearance, or an immediate turn away from the terrain.

In the year preceding this accident, two other U.S.-registered turbojet airplanes, which were not equipped with a GPWS, crashed in similar circumstances. On March 15,1991, a Hawker Sidley HS 125, operating as an on-demand air taxi, crashed into the side of a mountain about 25 miles east of San Diego, California, killing all nine passengers and crewmembers. Before impact, the airplane had been level at 3,500 feet msl, heading east, in darkness, as the crew was attempting to receive their IFR clearance. The GPWS manufacturer estimated that on that flight a GPWS would have alerted 20 seconds before impact.

On September 4,1991, a Gulfstream G II, operated by Conoco Oil, crashed m Malaysia, near the town of Kota Kinabalu, killing all 12 passengers and crewmembers onboard. The investigation, which is ongoing, is being conducted by the Government of Malaysia with the participation of the Safety Board in accordance with the provisions of Annex 13 to the Convention on International Civil Aviation. The Malaysian authorities conducting the investigation have indicated that the airplane descended during its initial approach and struck a mountain about 30 miles from the airport. The manufacturer of the GPWS has mdicated that a GPWS would have alerted the crew of that airplane about 28 seconds before impact.

In all three accidents, if each airplane had been equipped with a GPWS, the system would most likely have sounded a warning in sufficient time for the flightcrews to have avoided the accidents. The Safety Board has previously urged the FAA to require GPWS on aircraft operating under 14 CFR Part 135. On October 9,1986, the Safety Board recommended that the FAA:

A-86-109

Amend 14 CFR 135.153 to require after a specified date the installation and use of ground proximity warning devices in all multi-engine, turbine-powered airplanes, certificated to carry 10 or more passengers.

On April 20, 1992, an FAA rule took effect that required all turbine-powered airplanes with 10 or more passenger seats operating under 14 CFR Part 135 to be equipped with an operating GPWS within 2 years. The Safety Board is pleased with the FAA's action and is encouraged that flights conducted under 14 CFR Part 135 will be afforded an enhanced level of safety resulting from the GPWS. As a result of the action of the FAA and the tangiile safety benefits that will follow, on May 27, 1992, the Safety Board closed the Safety Recommendation, classified it "Acceptable Action," and removed it from its "Most Wanted" list of safety recommendations. However, the Safely Board believes that this accident and other similar accidents underscore the need to equip all turbojet-powered airplanes with the GPWS, regardless of the regulation governing the conduct of the flight.

The FAA recently required turbine-powered airplanes with as few as six passenger seats to be equipped with CVRs, a requirement that has resulted in benefits to air safety that were manifested in the investigation of this accident. The Safety Board believes that while adherence to FARs, prescribed minimum altitudes, and approach procedures does assure safe terrain avoidance, the additional margin of safety provided by the GPWS is necessary and should be required in sophisticated high-performance airplanes. Therefore, the Safety Board urges the FAA to require all turbojet-powered airplanes that have six or more passenger seats, operating under 14 CFR Part 91, to be equipped with a GPWS.

8. CONCLUSIONS

1. The airplane was certificated, equipped, and maintained in accordance with applicable Federal Aviation Regulations.

2. The pilots were certificated in accordance with appropriate Federal Aviation Regulations.

3. There were no airplane-related abnormalities at the time of the accident.

4. Air traffic control was not a factor in this accident

5. The captain departed Rome under visual flight rules despite the low ceilings and the mountainous terrain.

6. The crew was not aware of their precise location relative to the mountainous terrain.

7. A ground proximity warning system would have alerted about 12 seconds before impact, and would most likely have provided sufficient time for the pilots to have taken action to avoid the terrain.

9. PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of this accident was the captain's decision to initiate visual flight into an area of known mountainous terrain and low ceilings and the failure of the flightcrew to maintain awareness of their proximity to the terrain

10. RECOMMENDATIONS

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

In conjunction with professional aviation associations and manufacturers of turbine-powered aircraft, inform corporations that are operating such aircraft under 14 CFR Part 91 of the circumstances of this accident, and encourage them to examine their flight operations to verify that policies and procedures are established and followed to prevent such accidents and to encourage first officers to play an active role in cockpit decision-making. (Class II, Priority Action) (A-92-54)

Require all turbojet-powered airplanes that have six or more passenger seats to be equipped with a ground proximity warning system. (Class II, Priority Action) **(A-92-55)**

The National Transportation Safety Board also makes the following recommendation to the National Business Aircraft Association:

Inform your membership of the circumstances of *this* accident, and encourage and assist them to examine their flight operations to verify that policies and procedures are established to prevent such accidents and to encourage first officers to play an active role in cockpit decision-making. (Class II, Priority Action) **(A-92-56)**

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

Susan Coughlin
Acting Chairman

John K. Lauber
Member

Christopher A. Hart
Member

John Hammerschmidt
Member

James L. Kolstad
Member

July 8, 1992

APPENDIX A

COCKPIT VOICE RECORDER TRANSCRIPT

TRANSCRIPT OF A FAIRCHILD MODEL GA-100 COCKPIT VOICE RECORDER S/N UNKNOWN REMOVED FROM A BRUNO STORES, BEECHJET BE400, N25BR WHICH WAS INVOLVED IN A TAKEOFF ACCIDENT ON DECEMBER 11, 1991 AT THE RICHARD D. RUSSELL AIRPORT, ROME, GEORGIA.

RDO	Radio transmission from accident. aircraft
CAM	Cockpit Area Microphone *sound* or source
-1	Voice identified as Captain
-2	Voice identified as First Officer
-3	Voice unidentified
CTR	Atlanta Enroute Air Traffic Controller (Center)
Z3E	November zulu three Echo
083	November zero eight three
075	November zero seven five
M941S	Mitsubishi nine four one Sierra
L39751	Lance three nine seven five one
UNK	Unknown source
•	Unintelligible word
e	Nonpertinent word
#	Expletive deleted
%	Break in continuity
0	Questionable text
(())	Editorial insertion
-	Pause

Notes : All times are expressed in eastern standard the.

INTRA-COCKPIT

AIR-GROWN0 COMMUNICATIONS

TIME & SOURCE	CONTENT
0804:16	Start of recording.
0808:00 AWOS	Richard D Russel airport Richard D Russel. airport automated weather observation, one three zero eight zulu weather, sky conditions one thousand two hundred broken, visibility one zero, temperature three one, dew point two niner, wind calm, altimeter three zero three one
0823:54	((Power interruption at the end of the inbound flight))
0930:33	Start of transcript.
0930:44 CAM	(sound of engine starting)
0931:05 CAM-1	we could run out under the edge but there's no edge anymore.
0931:08 CAM-2	** variable ** ceiling should be about' a thousand feet MSL**.
0931:17 CAM-1	we can still talk to Atlanta center thirty three --.
0931:22 CAM-2	oh yeah there was a flight service -- frequency or somethin' on that approach plate.
0931:31 CAM-1	or go to the VOR or somethin'.
0931:32 CAM-?	if we can go to Chattanooga, we can ah --.

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
0932:00 CAM-2	((sound of laugh))		
0932:02 CAM-?	you know change is change boy you know what I mean.		
0932:06 CAM-?	you countin' the wrong money if you can't change. * flexibility is us boy we can manufacture anything today.		
0932:12 CAM	((sound of engine start))		
0932:30 CAM-2	do you see that frequency on there.		
0932:32 CAM-1	no thirty three eight is Atlanta center.		
0932:35 CAM-2	ah I thought I saw.		
0932:46 CAM-?	Chattanooga still locked in the fog?		
0932:49 CAM-1	naw I think they got in there .		
0932:50 CAM-?	they got in alright?		
0932:56 CAM-1	go back to one.		

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
0933:00 CAM-1	ah yeah to go to one, you make a left here.		
0933:14 CAM-2	best way to go is straight agross then go right over to the center *.		
0933:20 CAM-2	it doesn't even have a sign for one. it has one for everything else .		
0933:23 CAM-1	we can go we can go straight across.		
0933:27 CAM-2	the ah parallel look's clear over here.		
0933:31 CAM-1	we're goin' down yonder.		
0933:32 CAM-1	taxi it on down.		
0933:35 CAM-2	yeah I got it now.		
		0933:58 RDO-1	Beech jet two five bravo romeo taxiing out to runway one at Rome.
0934:45 CAM-1	the tops are at a thousand.		
0934:53 CAM	((sound of altitude alert chime))		

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
0935:05 CAM	((sound of altitude alert chime))		
0935:07 CAM-1	huh.		
0935:08 CAM-2	((sound of laugh))		
0935:09 CAM-2	wiggle it aground a little bit.		
0935:12 CAM-1	see if that trim will work over there.		
0935:16 CAM-2	yeah you got to be rough on it though I think I've done.		
0935:18 CAM-1	I've pushed down on it, everything else. them slides don't want ta work,		
		0935:31 RDO-1	Beech jet two five brave romeo takin' off runway one at Rome.
0935:37 CAM	((sound of double cabin chime))		
0935:50 CAM-2	I'm gunna keep it slow.		
0935:51 CAM	((sound of increasing engine noise))		
0936:23 CAM-2	power's set.		

1w

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
0936:26 CAM	((sound of radio frequency change tone))		
0936:31 CAM-2	Vee one.		
0936:32 CAM-2	rotate.		
0936:33 CAM-1	*.		
0936:36 CAM-2	positive rate gear up.		
0936:39 *CAM-?*	**.		
		0936:46 RDO-1	Atlanta center Beech jet two five bravo romeo.
0936:46 CAM-?	we got a little lake back there to look at.		
0936:51 CAM-1	climb power.		
0936:52 CAM-1	back around to the right.		
		0937:00 CTR	- * five eight zero three echo is cleared direct to Qadsden direct Deoatur.
0937:04 CAM-2	flaps up.		

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
		0937:06 Z3E	zero three echo direct Gadsen direct Decatur.
0937:10 CAM-1	let's make a right. let's make a three sixty right here.		
		0937:13 RDO-1	Atlanta center Beech jet two five bravo romeo.
		0937:18 CTR	November two five bravo romeo Atlanta, go ahead.
		0937:20 RDO-1	okay we off of Rome ah runway one. we in ah right turn ah VFR lookin' for a clearance over to Huntsville.
		0937:28 CTR	november two five bravo romeo squawk two two three one and maintain VFR. we have traffic four five sight now southeast of Rome. I'll have somethin'for you -- later.
		0937:37 RDO-1	two two thtee one two five B R.
		0937:42 CTR	zero eight three you get the Rome altimeter?

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
		0937:45 083	three zero three three.
		0937:47 CTR	yes sir, hold - cleared to Rome ta hold. expect approach clearance at one five zero zero. we got one below ya right now.
		0937:54 083	okay one five zero zero *.
0937:57 CAM-2	find out his altitude?		
0938:01 CAM-1	huh?		
0938:02 CAM-2	find out that other guy's altitude if you can.		
		0938:03 CTR	zero seven five maintain three thousand two hundred till Rome cleared localizer DME app- runway one approach to Rome airport.
		0938:13 075	* zero seven five we're out of four thousand for three thousand two hundred cleared for the approach and ah this will be to a low approaoh back out to Rome for holding if I may.
		0938:21 CTR	okay and - hold short the approach.

INTRA-COCKPIT

TIME & SOURCE	CONTENT
0938:27 CAM	((sound of altitude chime))
0938:29 CAM-1	waitin' for them.
0938:32 CAM-1	waitin' for them.
0938:37 CAM-1	center won't center won't okay that.

AIR-GROUND COMMUNICATIONS

TIME & SOURCE	CONTENT
0938:25 075	zero seven five.
0938:31 M941S	Atlanta Center Mitsubishi nine forty one sierra is descending out of one six thousand for one one thousand.
0938:36 CTR	nine four one sierra center roger.
0938:41 CTR	you goin' to Rome or Bunni?
0938:43 M941S	ah we filed Rome and they haven't given us Bunni yet we've been expectin' it .
0938:51 CTR	okay I'll have some- that for you in a little bit.
0938:53 M941S	all righty.

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TPW & SOURCE	CONTENT	TIME & SOURCE	CONTENT
0939:01 CAM-2	# it's *.		
0939:03 CAM-?	*.		
		0939:03 CTR	four one sierra is cleared direct Bunni direct Fulton County.
		0939:05 M941S	direct Bunni direct Fulton County nine forty one sierra.
0939:06 CAM	((sound of altitude chime))		
		0939:14 CTR	November two five B R say altitude VFR.
		0939:17 RDO-1	ah we're at thirteen hundred VFR ah just southwest of Rome airport.
		0939:22 CTR	okay.
0939:24 CAM	((sound of altitude chime))		
0939:30 CAM-1	he don't see us on radar.		
0939:33 CAM-2	yeah *.		

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
		0939:35 CTR	November niner four one sierra descend and maintain niner thousand.
		0939:38 M941S	down to niner thousand forty one sierra.
0939:39 CAM-1	we're gunna have to get away from that mountain down there pretty soon.		
0939:43 CAM-1	a one eighty or somethin'.		
0939:45 CAM-2	which way do you want to go?		
0939:46 CAM-1	doesn't matter.		
0939:47 CAM-2	huh.		
		0939:48 L39751	good morning center, Lance three niner seven five one is with you at six thousand.
0939:49 CAM-2	do a one eighty to the left?		
		0939:50 CTR	aircraft callin' Atlanta say again.
0939:52 CAM-1	you're gettin close. you're gunna to the right.		

INTRA-COCKPIT		AIR-GROUND COMMUNICATIONS	
TIME & SOURCE	CONTENT	TIME & SOURCE	CONTENT
		0939:52 L39751	ah Lance three niner seven tire one is with ya at six thouaand.
0939:53 CAM-2	huh.		
0939:54 CAM-1	to the right.		
0939:54 CAM-2	okay, I can't see over there.		
		0939:55 CTR	Lance three niner seven five one Atlanta roger.
0939:56 CAM-1	you're gunna turn right back into that guy shootin' the approach.		
0939:59 CAM-2	okay,		
0940:00 CAM-1	there's a mountain right out here.		
0940:01 CAM-2	yeah.		
0940:02 CAM-1	and an antenna you won't be able to see in the fog.		
0940:03 CAM-2	should I just punch up?		
0940:04 CAM-1	no there's a guy on approach out there.		

INTRA-COCKPIT

TIME & SOURCE	CONTENT
0940:06 CAM-2	which way do you want to go?
0940:07 CAM-1	go back to the right.
0940:13 CAM-2	I can't see over here. that's why I wanted to go the other way.
0940:16 CAM-1	don't climb any more.
0940:21 CAM-1	bring it right on around.
0940:32 CAM-1	pull it back a little.
0940:33 CAM-2	huh.
0940:35 CAM-1	slow 'er down a little.
0940:55	End of recording

AIR-GROUND COMMUNICATIONS

TIME & SOURCE	CONTENT

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1953 12/11/91 ROME,GA A/C Reg. No. N25BR Time (Lcl) - 0941 EST

----Basic Information----
Type Operating Certificate-NONE (GENERAL AVIATION)

Type of Operation -EXECUTIVE/CORPORATE
Flight Conducted Under -14 CFR 91
Accident Occurred During -MANEUVERING

Aircraft Damage
DESTROYED
Fire
ON GROUND

	Fatal	Serious	Minor	None
Crew	2	0	0	0
Pass	7	0	0	0

----Aircraft Information----
Make/Model - BEECH 400
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 15780
No. of Seats - 9

Eng Make/Model - P&W JT15D-5
Number Engines - 2
Engine Type - TURBOFAN
Rated Power - 2900 LBS THRUST

ELT Installed/Activated - YES-UNK/NR
Stall Warning System - YES

----Environment/Operations Information----
Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - IMC
Wind Dir/Speed- CALM
Visibility - UNK/NR
Lowest Sky/Clouds - UNK/NR
Lowest Ceiling - UNK/NR OVERCAST
Obstructions to Vision- FOG
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
ROME,GA
Destination
HUNTSVILLE,AL

ATC/Airspace
Type of Flight Plan - IFR
Type of Clearance - NONE
Type Apch/Lndg - NONE

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

----Personnel Information----
Pilot-In-Command
Certificate(s)/Rating(s)
ATP
SE LAND,ME LAND

Age - 59
Biennial Flight Review
Current - YES
Months Since - 11
Aircraft Type - BE-400

Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT

Flight Time (Hours)

Total	- 17000	Last 24 Hrs	- UNK/NR
Make/Model	- 600	Last 30 Days	- UNK/NR
Instrument	- UNK/NR	Last 90 Days	- UNK/NR
Multi-Eng	- UNK/NR	Rotorcraft	- UNK/NR

Instrument Rating(s) - AIRPLANE

----Narrative----
BEFORE TAKEOFF, AN IFR FLT PLAN WAS FILED FOR A 15 MIN FLT FROM ROME, GA, TO HUNTSVILLE, AL. TAKEOFF WAS COMMENCED AT 0937 EST WITH THE COPLT FLYING THE ACFT. AFTER A VFR TAKEOFF, THE CAPT CONTACTED ATLANTA CENTER TO OBTAIN AN IFR CLNC. THE CONTROLLER ADVISED THAT OTHER TRAFFIC WAS IN THE AREA & INSTRUCTED THE FLT TO REMAIN VFR (WHILE AN IFR CLNC WAS BEING ARRANGED). AT THAT TIME, THE FLT RPRTD AT 1300' IN VFR CONDS. WHILE WAITING FOR AN IFR CLNC, THE CREW BECAME CONCERNED ABOUT HIGHER TERRAIN & LOW CEILINGS. AT ABOUT 0940, THE CAPT DIRECTED THE COPLT TO FLY "BACK TO THE RIGHT." APRX 1 MIN LATER, THE CVR STOPPED RECORDING & RADIO CONTACT WAS LOST WITH THE ACFT. LATER, THE ACFT WAS FOUND WHERE IT HAD COLLIDED WITH THE TOP OF MT LAVENDAR. ELEVATION OF THE CRASH SITE WAS APRX 1580' MSL. THE ACFT WAS NOT EQUIPPED WITH A GROUND PROXIMITY WARNING SYS. (FOR DETAILS SEE: SUMMARY REPORT)

Brief of Accident (Continued)

File No. - 1953 12/11/91 ROME,GA A/C Reg. No. N25BR Time (Lcl) - 0941 EST

Occurrence #1 IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation CLIMB

Finding(s)
1. TERRAIN CONDITION - HIGH TERRAIN
2. WEATHER CONDITION - CLOUDS
3. WEATHER CONDITION - LOW CEILING
4. WEATHER CONDITION - FOG
5. VFR FLIGHT INTO IMC - CONTINUED - PILOT IN COMMAND

Occurrence #2 IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation MANEUVERING - TURN TO REVERSE DIRECTION

Finding(s)
6. TERRAIN CONDITION - MOUNTAINOUS/HILLY
7. CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident was:
THE CAPTAIN'S DECISION TO INITIATE VISUAL FLIGHT INTO AN AREA OF KNOWN MOUNTAINOUS TERRAIN AND LOW CEILINGS AND THE FAILURE OF THE FLIGHTCREW TO MAINTAIN AWARENESS OF THEIR PROXIMITY TO THE TERRAIN.

ERRATA

THESE CORRECTIONS SHOULD BE MADE TO THE PREVIOUSLY PUBLISHED REPORT IDENTIFIED AS FOLLOWS

AIRCRAFT ACCIDENT REPORT

HORIZON AIR, INC.
DEHAVILLAND DHC-8
SEATTLE-TACOMA INTERNATIONAL AIRPORT
SEATTLE, WASHINGTON
APRIL 15, 1988

NTSB/AAR-89/02 (PB89-910402)

Page 3, paragraph 2, lines 10-11	Delete, "fired the extinguisher bottles and pulled the fuel cutoff T-handle" Replace with, "pulled the fuel cutoff T-handle and fired the extinguisher bottles"
Page 12, paragraph 5, line 4	Change the word "floor" to "wall".
Page 21, paragraph 2, lines 7-8	Delete, "and use a spring loaded button on the control lever to lock the lever in the on position. This provides" Replace with, "to provide"
Page 24, first paragraph, line 3	Replace "discovered" with "fully understood'
Page 27, section 2.3.1	Delete item 3 in this section and renumber the remaining items.

Page 30, paragraph 6, lines 1-3

Delete the sentence, "The safety board is very concerned that the effectiveness of the engine fire suppression system was negated by apparent flaws in the design of the cowl and cowl latches on the deHavilland DHC-8."

Add in its place, The Safety Board is very concerned that the effectiveness of the engine fire suppression system was negated by the performance of the cowl and cowl latches on the deHavilland DHC-8."

☆ U.S. Government Printing Office : 1992 - 311-951/60007

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DATE
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9-29-92
NTIS