NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

December 29, 2003

Group Chairman's Factual Report

NYC03MA183

A. Accident

Operator:	Colgan Air, Inc.
Location:	Yarmouth, Massachusetts
Date:	August 26, 2003
Time:	1540 Eastern Daylight Time (EDT)
Airplane:	Beech 1900D, N240CJ

B. Operational factors Group

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C. Summary

On August 26, 2003, at 1540 eastern daylight time, a Beech 1900D, N240CJ, operated by Colgan Air Inc. as flight 9446 (d.b.a. US Airways Express), was substantially damaged when it impacted water near Yarmouth, Massachusetts. The certificated airline transport pilot and certificated commercial pilot were fatally injured. Visual meteorological conditions prevailed for the flight that departed Barnstable Municipal Airport (HYA), Hyannis, Massachusetts; destined for Albany International Airport (ALB), Albany, New York. An instrument flight rules flight plan was filed for the positioning flight conducted under 14 CFR Part 91.

D. History of Flight

According to a representative of Colgan Air Inc., after scheduled maintenance, the flightcrew was dispatched to fly the accident airplane on a positioning flight. The flightcrew was aware that maintenance was performed on the airplane; however, it was unknown if the flightcrew was aware of the type of maintenance.

According to data from Federal Aviation Administration (FAA) air traffic control (ATC), the flight departed runway 24 at Hyannis about 1538. Shortly after takeoff, the flightcrew declared an emergency and reported a "runaway trim." The airplane initiated a left turn and reached an altitude of approximately 1,100 feet. The flightcrew subsequently requested to land on runway 33, and ATC cleared the flight to land on any runway. No further transmissions were received from the flightcrew.

Witnesses observed the airplane in a left turn, with a nose-up attitude. The airplane then pitched nose-down, and impacted the water at an approximate 30-degree angle.

According to data from the flight data recorder (FDR), the airplane began the flight at a pitch trim control position of approximately 2 degrees negative (nose down). Shortly after takeoff, the pitch trim control moved to approximately 3 degrees negative, where it remained for a period of about 10 seconds. The pitch trim control then moved to an approximate 7 degree negative position, where it remained for the duration of the flight. The data also revealed that after takeoff, the airspeed continued to increase to approximately 250 knots.

The accident flight was the first flight after maintenance had been performed on the airplane; which included replacement of both elevator trim actuators and the forward elevator trim cable.

Excerpts of the cockpit voice recorder (CVR) transcript revealed the following:

At 1523:30, the captain called for the Before Start checklist.

At 1523:43, the first officer stated, "preflight's complete. cockpit scan complete." The captain replied, "complete."

At 1523:58, the first officer stated, "maintenance log, release, checked the aircraft." The captain replied, "uhhhh. maintenance and release on aircraft. The captain subsequently identified that the FDR was inoperative, and confirmed that the MEL was still open.

At 1525:11, the captain began to start the right engine, before being interrupted by an individual outside the airplane. Approximately 1 minute later, after a conversation with maintenance personnel, the captain resumed the starting of the right engine.

At 1529:29, as the captain was starting the left engine, the flightcrew began non-pertinent conversation, which lasted about 30 seconds.

At 1530:04, the captain called for the after start checklist. After completing the after start checklist items, the first officer announced the checklist "complete" 15 seconds later.

At 1530:21, the captain continued the previous non-pertinent conversation, followed 10 seconds later with, "all right we're ready to taxi with HOTEL."

At 1530:50, the flightcrew began a conversation about the flightplan to ALB, taxiing the airplane, and which pilot would fly the airplane. The conversation lasted for about 4 minutes.

At 1534:48, the captain stated, "all right, run the checklist." The items that followed were similar to the items that were required to be completed on the Taxi Checklist.

At 1535:14, the first officer stated, "flaps are zero indicating zero, three trims are set." The captain replied, "roger."

At 1535:18, the first officer called the taxi checklist "complete."

At 1535:26, the flight crew began a non-pertinent discussion about a landing airplane. The discussion lasted about 1 minute and 27 seconds.

At 1537:17, the captain stated, "all right. forty six is ready."

The flightcrew then began to announce several item which were identified as being on the Before Takeoff checklist; however, the checklist was not called for.

At 1537:48, the first officer radioed the HYA tower controller and announced that the flight was ready to depart. The flight was subsequently cleared for takeoff.

At 1538:40, the first officer stated, "V1... rotate." About 6 seconds later, the captain stated, "we got a hot trim, Steve... roll back Steve roll back roll back roll back roll back."

At 1538:53, the captain stated, "I got it... (pull) back... she's heavy buddy... roll it back roll my trim Steve."

At 1539:00, the captain stated, "do the electric trim disconnect... hold... all right, Steve... hold back Steve"

At 1539:04, the captain stated, "no go on the controls with me Steve." The first officer replied, "I got it."

At 1539:14, the captain requested that the landing gear be raised, followed by the CVR recording sounds similar to landing gear motor noises.

At 1539:18, the captain requested that the flaps be raised, which the first officer conformed that they were "up."

At 1539:21, the captain radioed the HYA tower controller, requesting an emergency return to the airport, which the tower controller approved.

At 1539:33, the first officer queried the captain, "you want the power back?" The captain replied, "pull the power back. pull the power back."

At 1539:36, the first officer stated, "slowly," followed by the CVR recording sounds similar to a decrease in engine/propeller speed.

At 1539:40, the captain stated, "all right, were gonna need both of us on this Steve."

At 1539:48, the first officer stated, "(could) I pull the breaker?"

At 1539:49, the CVR recorded a sound similar to an altitude alerter.

At 1539:49, the captain stated, "pull the breaker Steve... pull the breaker... I got it if you've got the trim baby."

At 1539:54, the first officer stated, "where is it?" The captain replied, "find it... look left of the silver thing, Steve. look left of the silver thing."

At 1540:02, the first officer stated, "left of the silver thing?" The captain replied, "left of the silver thing Steve... don't let go of the st- control Steve, just stay with me... you pull back for all your worth, baby... just keep (pulling/holding) back for all your worth.... Steve (pull/hold) back."

At 1540:39, the CVR recorded, "terrain terrain. * pull up."

At 1540:47, the CVR recorded, "woop woop pull up pull-"

The recording ended at 1540:47

E. Flight Crew Information

Summary

The captain was a company line pilot and he was certificated, current and qualified in the Beech 1900D in accordance with Colgan Air Inc., and FAA requirements. The first officer was current and qualified for his position in the Beech 1900D in accordance with Colgan Air Inc., and FAA requirements. A review of FAA accident/incident and enforcement records of both flight crewmembers indicated that there was no history of certificate actions filed against either pilot.

On the day of the accident, both crewmembers had completed their assigned flight schedule, and were proceeding to their domiciles, when Colgan Air operations personnel called them back to the airport to fly the airplane to Albany.

Details

Captain:

Date of hire with Colgan Air, Inc.: July 16, 2001

Airman Certificates / Ratings and Limitations:

Airline Transport Pilot (issued 01/08/03)
Airplane Multiengine Land
BE-1900

Commercial Privileges
Airplane Single Engine Land and Sea
BE-1900 Second-in-Command Required

Mechanic (issued 01/28/97)

Airframe and Powerplant

Medical Certificate:

First Class (issued 03/18/03)
Limitations: Holder Must Wear Corrective Lenses

A review of FAA records indicated that on April 24, 2000, the captain was issued a notice of disapproval of application for a commercial multi-engine rating. He subsequently passed the test and was issued a temporary airman certificate on April 25, 2000.

A review of FAA records indicated that on January 6, 2003, the captain was issued a notice of disapproval of application for an airline transport rating, and BE-1900 type rating. The notice of disapproval stated that upon reapplication, the applicant was to be reexamined on non-precision approaches, and normal and abnormal procedures. The captain subsequently passed the test and was issued a temporary airman certificate on January 8, 2003.

A review of FAA records indicated that the captain had no record of airplane accident, incident, or enforcement actions.

According to Colgan Air Inc. employment and flight records, the captain had accumulated/completed the following flight times and training prior to the accident:

Total flight time:	2,891 hours
Total time with company:	1,364 hours
Total pilot-in-command (PIC) time:	1,836 hours
Total PIC with Company:	451 hours
Total BE-1900 PIC flight time:	1,179 hours
Total BE-1900 flying time last 90 days:	211 hours
Total BE-1900 flying time last 30 days:	76 hours
Total BE-1900 flying time last 24-hour period:	7.3 hours

Total duty time (day of accident): 10.6 hours

Most recent recurrent ground training prior to the accident:	1/24/03
Most recent proficiency check prior to the accident:	6/05/03

First Officer:

Date of hire with Colgan Air, Inc.: October 4, 2002

Airman Certificate / Ratings and Limitations:

Commercial Pilot (issued 10/18/00)
Airplane Single and Multiengine Land
Instrument Airplane

Flight Instructor
Airplane Single Engine Land
Instrument Airplane

Medical Certificate:

First Class (issued 08/22/03)
Limitations: Must Wear Corrective Lenses for Near and Distant Vision.

A review of FAA records indicated that on July 10, 1998, the first officer was issued a notice of disapproval of application for a commercial pilot rating. The first officer failed the test again on July 13, 1998, and was issued a notice of disapproval of application. He subsequently passed the test on the third attempt, and was issued a temporary airman certificate on July 13, 1998.

A review of FAA records indicated that the first officer had no record of airplane accident, incident, or enforcement actions.

According to Colgan Air Inc. employment and flight records, the first officer had accumulated/completed the following flight times and training prior to the accident:

Total flight time:	2,489 hours
Total flight time with company:	689 hours
Total pilot-in-command (PIC) flight time:	1,667 hours
Total PIC with Company:	0 hours
Total BE-1900 second-in-command (SIC) flight time:	689 hours
Total BE-1900 flying time last 90 days:	222 hours
Total BE-1900 flying time last 30 days:	52 hours
Total BE-1900 flying time last 24-hour period:	8.7 hours

Total duty time (day of accident): 10.7 hours

Most recent recurrent ground training prior to the accident:	1/24/03
Most recent proficiency check prior to the accident:	11/03/02

F. Training

The following references were extracted from the FAA Approved Colgan Air Crew Member and Dispatcher Training Program VOL IV, which identified the training Colgan Air Beech pilots received specific to elevator trim malfunctions.

Paragraph 4.4.0 Advanced Simulation Training Syllabus Initial New-Hire, Transition and Upgrade from SIC to PIC Pilot Simulator Training-Appendix H: Beech 1900 Series-Abnormal and Emergency Procedures, Lesson 4, Appendix 4-15 Revision 17 Dated 01 November 02 item 6 "Emergency Procedures" specified training for trim failure.

Paragraph 4.4.0 Advanced Simulation Training Syllabus Initial New-Hire, Transition and Upgrade from SIC to PIC Pilot Simulator Training-Appendix H: Beech 1900 Series-Abnormal and Emergency Procedures, Lesson 7, Appendix 4-22 Revision 17 Dated 01 November 02 item 3, "Emergency Procedures" –Flight Controls sub item Trim Run Away.

Paragraph 4A.1.3, Initial New Hire, Upgrade, Transition, Recurrent and Re-qualification Aircraft Ground Training 121.419 and 121.427 4A-A/C Ground-10 Revision 5 Dated 30 August 98 item I, Flight Controls included "Unscheduled Electric Elevator Trim" as Flight Control elements to be trained.

The preceding Beech 1900 training elements provided for class room training discussions and practical simulator training on dealing with a runaway trim condition.

G. Airplane Information - Weight and Balance

The following weight and balance scenarios were developed to determine the gross weight of the airplane, and its operating envelope at that weight. Scenario number 1 was determined using information provided by Colgan Air Inc., and using FAA standard weights. Scenario number 2 was determined by using information provided by Colgan Air Inc., and using the known weights of the pilots.

Scenario 1

Basic Empty Weight (BEW)	10,370.0
FDR Upgrade	6.7
New BEW	10,376.7
2 Crew Flight Crewmembers @ 180#	360.0
Crewmember Flight Gear	20.0
Basic Operating Weight (BOW)	10,756.7
Fuel	3,271.0
Ramp Weight	14,027.7
Fuel Burn During Taxi	(-75.0)
Takeoff Weight	13,952.7

Scenario 2

Basic Empty Weight (BEW)	10,370.0
FDR Upgrade	6.7
New BEW	10,376.7
2 Crew Flight Crewmembers	454.0
Crewmember Flight Gear	20.0
Basic Operating Weight (BOW)	10,850.7
Fuel	3,271.0
Ramp Weight	14,121.7
Fuel Burn During Taxi	(-75.0)
Takeoff Weight	14,046.7

Both weight and balance scenario results revealed that the airplane was within the operating envelope for the flight.

H. Standard Operating Procedures (SOPs)

Sterile Cockpit Concept

Review of the Colgan Air, Inc, Flight Operations Policy and Procedures Manual (FOPP), revealed that during the periods of taxiing, takeoff, and altitudes below 10,000 feet indicated, the "flight crewmembers will not participate in any activity which could distract any flight crewmember from the performance of their duties or which could interfere in any way with the proper conduct of those duties." Examples given by the manual, of activities that were to be avoided, included "engaging in non-essential conversations."

Aircraft Maintenance and Flight Log

The FOPP also detailed the pilot's responsibilities for determining the airplanes airworthiness. It stated;

A. The aircraft must be airworthy in all respects as specified in the type certificate. All instruments and equipment required for the safe operation of the aircraft must be operable. Prior to any flight, the Pilot-in-Command will complete the following:

1. Ensure the Airworthiness Certificate, Registration Certificate, Aircraft Maintenance & Flight Log, and a MEL Control Log are onboard. Ensure the above items are for the assigned aircraft. Ensure an additional Aircraft Maintenance & Flight Log and a MEL Control Log is onboard to record discrepancies found during the flight day. Ensure MEL "inoperative" stickers are in the maintenance can.

2. Review/Verify the Aircraft Maintenance & Flight Log back to the latest valid Airworthiness Release and ensure that all discrepancies between that Airworthiness Release and the current log page are corrected or properly deferred. If the Captain determines that the aircraft status is other than listed on the release, the Captain will inform System Control and correct the inconsistency.

3. Review the previous flights for Captain's signature. If the previous Captain's signature is missing, attempt to locate the Captain. If unable to locate the previous Captain, the new Captain will verify that there are no open discrepancies, and notify System Control. System Control will attempt to locate the previous Captain and verify no open discrepancies.

Review the MEL Control Log for items that have been deferred in accordance with the approved MEL procedures. Compare open MEL's listed on the MEL Control Log with the Dispatch Release. If any differences are found the PIC must contact System Control to correct the differences.

Perform the preflight inspection of the aircraft. If any discrepancies are noted they must be documented in the Aircraft Maintenance & Flight Log and System Control notified.

Airworthiness Release is valid as follows:

a. Beech 1900 - four (4) flight days and may be extended on a daily basis, if authorized by maintenance control. Enter the extension in the aircraft maintenance logbook.

b. Saab 340 - three (3) calendar days and may be extended on a daily basis, if authorized maintenance control. Enter the extension in the aircraft maintenance logbook.

No aircraft may be operated with inoperable equipment or instruments unless the operation is in accordance with an approved Minimum Equipment List (***MEL***) for the aircraft type and/or Colgan Air's DMI procedures.

Review of the Aircraft Maintenance and Flight Log for the accident flight revealed a discrepancy, which stated, "Flt. Data Recorder needs downloading due to mx. Replacement of Elevator trim cable (Fwd. Most)." The discrepancy was entered and signed by a mechanic. The discrepancy was released and signed by the same mechanic, in accordance with an approved Minimum Equipment List, and supporting control number.

Checklists

Review of Colgan Air's Beech 1900 Company Flight Manual revealed that it was FAA approved and contained the expanded normal checklist procedures, as well as abnormal and emergency procedures, policies and procedures; all of which applied to Colgan Air flight operations.

The manual had specific guidance on the use of normal checklists and procedures, and was to be used to "ensure all safety items are accomplished." All of the checklists were to be accomplished using a challenge and response method (except for the climb and after landing checklists). The manual also gave guidance in the event that the checklist flow was interrupted. It stated;

"Interruptions to checklists increase the possibility of items being missed, which in turn may create hazards to flight operations. When interruptions occur, the crew must give consideration to restarting the checklist from the beginning, taking into consideration such factors as the length and type of interruption."

The following checklist excerpts, which were included in Colgan Air's Beech 1900 Company Flight Manual, were to have been accomplished by the accident flightcrew. The details of the checklists are focused on the elevator trim system and its related components and systems.

Preflight Inspection (Pilot Walk Around)

"A preflight inspection will be accomplished prior to every flight. A comprehensive 'Preflight Inspection - Detailed' must be accomplished on the aircraft's first flight of the day, after significant maintenance has been performed or anytime the aircraft's condition is in question."

"The Detailed Preflight Inspection will normally be accomplished by the first officer, although either or both crewmembers may complete the inspection."

The Detailed Preflight Inspection of the empennage and tail section of the airplane required that the "[Trim] Tabs are in Neutral Position."

Cockpit Scan & Origination Safety Crew Check

The Cockpit Scan provided an organized sequence for moving through the various panels within the cockpit, to ensure proper configuration of the aircraft prior to engine start. The sequence of steps was only recommended, not mandatory.

The Origination Checks appeared as boxed items in the cockpit scans. They needed only to be accomplished prior to the aircraft's first flight of the day, return to service after maintenance, or if First Flight items had not been signed off in the maintenance log book.

The captain's cockpit scan was to include the verification that the elevator trim was "SET." The first officer's cockpit scan was to include the verification of the trim indicators.

Before Start Checklist

The Before Start Checklist required that the captain review the dispatch release and sign it. He was also required to review the maintenance release and the dispatch release with the first officer.

First Flight of the Day Checklist

After the engines had been started the checklist required that a "First Flight of the Day" check be performed by the flightcrew. The expanded items of the "Electric Pitch Trim" check included;

ELEV TRIM
Switch.....ON
Pilot's and Copilot's Trim
Switches.....CHECKED

1) Pilot's trim will override copilot's trim.
2) Movement of only half switch will not activate trim.

Trim Disconnect Switch.....PRESS TO 2ND LEVEL AND RELEASE

1) PITCH TRIM OFF Annunciator - ILLUMINATED
2) Electric Pitch Trim - DEACTIVATED

ELEV TRIM Switch.....OFF then ON

PICH TRIM OFF Annunciator - EXTINGUISHED

Electric Pitch Trim.....SET FOR TAKEOFF

Taxi Checklist

According to the expanded procedures for the TAXI CHECKLIST, it instructed the Captain to "Verify proper trim indicator positions (UP 2 Units UC & 3 Units UE, Roll 0, Yaw 0) and state 'SET'." Procedures also instructed the First Officer to complete the same task.

For informational purposes of this report, the following checklists, which dealt with the elevator trim system, were available to the flightcrew.

Abnormal Checklist

The Colgan Air Beech 1900 Company Flight Manual section for abnormal procedures (UE Airplanes) included a checklist for "ELECTRIC PITCH TRIM INOPERATIVE (PITCH TRIM OFF Annunciator)." The checklist item was;

- ELV TRIM Switch CYCLE OFF and BACK to ELEV TRIM

The checklist was a command and response checklist, with the corrective task being accomplished by the NFP at the direction of the captain.

Emergency Checklist

The Colgan Air Beech 1900 Company Flight Manual section for emergency procedures (UE Airplanes) included a checklist for "UNSCHEDULED ELECTRIC ELEVATOR TRIM (IF INSTALLED)."

The memory items (to be performed by the flying pilot) were;

1. Airplane Attitude.....MAINTAIN (using elevator control)

2. Control Wheel Disconnect Switch.....DEPRESS FULLY (PITCH TRIM OFF Annunciator ILLMINATED)

The checklist items were;

3. Manually re-trim airplane

4. Elev Trim Switch (located on the pedestal).....OFF (PITCH TRIM OFF Annunciator EXTINGUISHED)

The checklist was a command and response checklist, with the corrective task being accomplished by the NFP at the direction of the captain.

I. Manufacturer Approved Flight Manual Procedures

According to a Beech 1900D Airliner FAA Approved Airplane Flight Manual, Normal Procedures section, it provided procedures by flight phase, which included preflight inspection procedures.

The preflight inspection process was to be initiated in the cockpit area, and the pilot performing the inspection was to assure that the elevator trim was "SET 1 1/2 UNITS NOSE UP." The pilot was to then proceed outside the airplane, where the elevator trim tabs was verified in the "NUETRAL POSITION." The elevator trim tab neutral position was determined by observing that the trailing edge of the elevator trim tab aligns with the trailing edge of the elevator, when the elevator is resting against the downstops with the elevator trim wheel set 1 1/2 units up.

The Beech 1900D Airliner FAA Approved Airplane Flight Manual, Normal Procedures section, also provided guidance to set the elevator trim for take off. It included:

Elevator Trim...SET FOR TAKEOFF

- Set trim in FWD range for C.G.'s in forward half of envelope.
- Set trim in AFT range for C.G.'s in aft half of envelope.

I. Simulator Evaluations

Members of the Operational Factors Group convened at Flight Safety International (FSI), Flushing, New York, on November 25, 2003, to observe company procedures in a Beech 1900 simulator.

The FSI simulator was an FAA certified Level "D" Beech 1900 full motion simulator. It had cockpit controls and displays similar to the accident airplane with some minor differences. The Operations Group agreed that 1 unit of trim movement on the manual trim wheel, would equal 1.6 degrees of trim tab movement on the elevator. Due to the limitation of the simulator trim system, the maximum downward trim setting was about 5 units. The trim system was not reversed for the tests.

The simulator was pre-programmed with the following parameters:

Departure Airfield - HYA runway 24
Takeoff weight - 13,907 pounds
Fuel - 3,200 pounds
C.G - 281 inches
Flaps - 0 degrees
Power Setting - 3,500 pounds of torque

Temperature - 23 degrees Celsius
Wind - 240 degrees at 5 knots

A simulator plan was developed by the Operational Factors Group that would incorporate the use of ATC communications, FDR data, recorded weather data, and Colgan Air SOPs. The goal of the plan was to observe the performance of the simulator as it was flown though pre-determined scenarios, and to observe pilot reactions.

The Operations Group agreed to the following:

The takeoff trim setting would be set to .5 units down prior to application of power, based upon the FDR data, as opposed to 3 units UP as specified in the taxi checklist. About 5 seconds after rotation, the pilots control wheel trim switch would be deactivated, and the manual trim wheel would be rotated an additional 1.5 units down. About 20 seconds after rotation, the manual trim wheel would be rotated downwards to it's stop. About 30 seconds after rotation, the airplane would be turned to the left, increasing the turn to about 30 degrees of bank. After the 90-degree point of the turn, the power would be decreased to idle. The turn would be continued until the 180-degree point.

An FSI instructor operated the simulator during the evaluations.

A pilot from Colgan Air Inc. occupied the left seat as the flying pilot, and a representative from the FAA, who had extensive experience in Beech 1900's, occupied the right seat and would perform the duties of NFP. The captain was assumed to have been the flying pilot.

During the first test flight, the airplane was positioned onto the approach end of runway 24. Power was applied to the pre-determined setting of 3,500 pounds of torque, and the brakes were released. Upon liftoff, the pilot flying commented that the airplane was extremely heavy during and after the rotation. About 5 seconds after the rotation, the NFP rotated the manual trim wheel about 1.5 degrees downward. The pilot noticed an increase in downward pressure. About 20 seconds after rotation, the NFP rotated the manual trim wheel to it's full nose down position. The airplane continued to climb to an altitude of about 1,200 feet indicated. Upon reaching the 90-degree point in the turn, the NFP decreased the power to idle. The airplane instantly began a descent, and the pilot attempted to maintain control. The airplane continued the descent and impacted the water at a nose down attitude; however, the simulators hydraulic limits were exceeded during the pilot's attempt to pull after power reduction. The pilot's were not able to arrest the descent.

The second test flight was performed using the same profiles. All of the same findings were noted as the first test.

Additional test flights were performed to observe the simulators performance to different pilot inputs. All of the same flight control, power, and timing settings were used for the tests, unless noted.

On the third test flight, after the 90-degree point, the power was reduced in increments, about 400 pounds of torque at a time, until the power was at the idle position. The airplane continued the descent, and with both pilots pulling on the yoke, the pilot's were not able to arrest the descent.

On the fourth test flight, the power was reduced to the idle position, and then gradually increased to maintain an IAS of 170 knots IAS, +/- 10 knots. The airplane continued the descent, and was unrecoverable.

On the fifth test flight, the right seat occupant flew the airplane. As the power was reduced at the 90-degree point, the airplane began a decent. The airplane continued the descent, and was unrecoverable.

On the sixth test flight, the power was reduced gradually to maintain an IAS of 170 knots, +/- 10 knots. The airplane continued the decent; however, the airplane was flown to the ground, touching down at an IAS of 180 knots.

The group elected to discontinue the testing due to fatigue of the test pilots, and the fact that the test pilots were becoming to familiar with the flight control malfunction.

The Operational Factors Group concluded simulator evaluations and observations on November 25, 2003.

Submitted by:

[redacted]

Stephen M. Demko
Senior Air Safety Investigator, NERA
January 12, 2004

J. LIST OF ATTACHMENTS

Attachment 1
Captains Flight Training Records

Attachment 2
Captains Flight Time and Crew Pairing Records

Attachment 3
First Officer's Flight Training Records

Attachment 4
First Officer's Flight Time and Crew Pairing Records

Attachment 5
Dispatch Release with Captain's signature

Attachment 6
Flight Logbook Excerpts with Discrepancy Items

Attachment 7
Fueling Record

Attachment 8
Accident Flight Weight and Balance Information and Investigation Calculations

Attachment 9
Crewmember Training Program Excerpts

Attachment 10
Ground Operations Manual Excerpts, Airworthiness Verification and Mechanical Irregularities

Attachment 11
Flight Operations Manual Excerpts, Sterile Cockpit and Standardization

Attachment 12
Colgan Air Company Flight Manual Excerpts, Checklists

Attachment 13
Raytheon Aircraft Beech 1900D Airliner FAA Approved Flight Manual Excerpts