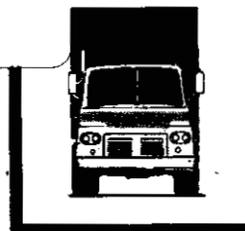
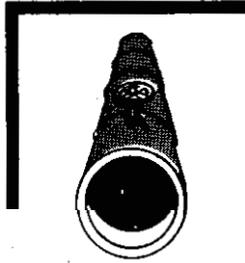
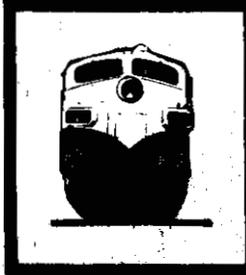


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# NATIONAL TRANSPORTATION SAFETY BOARD

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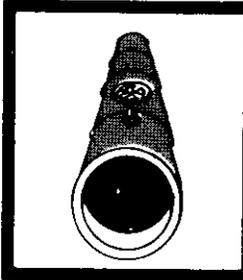
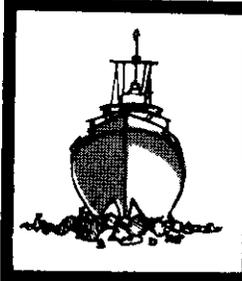
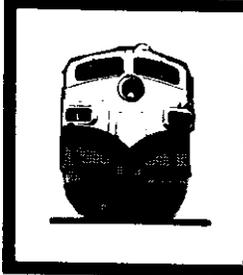
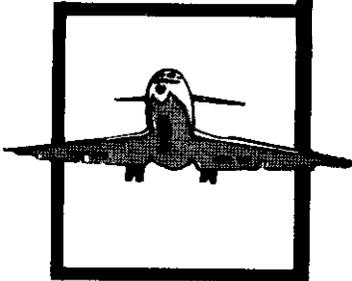
WASHINGTON, D.C. 20594

## AIRCRAFT ACCIDENT REPORT

FLORIDA COMMUTER AIRLINES, INC.  
DOUGLAS DC-3, N75KW  
GRAND BAHAMA ISLAND, BAHAMAS  
SEPTEMBER 12, 1980

NTSB-AAR.81.5  
*C.4*

UNITED STATES GOVERNMENT



# NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

## ERRATUM

### AIRCRAFT ACCIDENT REPORT

AIR CANADA  
McDONNELL-DOUGLAS DC-9-32 (CF-TLU)  
EAST OF BOSTON, MASSACHUSETTS  
SEPTEMBER 17, 1979  
NTSB-AAR-80-13

Page 13, under "2.1 General," 4th paragraph, line 4:

Change "discernible" to "detected".

April 10, 1981

UNITED STATES GOVERNMENT

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				6. Performing Organization CRRA	
7. Author(s)				8. Performing Organization Report No.	
9. Performing Organization Name and Address National Transportation Safety Board Bureau of Accident Investigation Washington, D.C. 20594				10. Work Unit No. 3175-B	
				11. Contract or Grant No.	
2. Sponsoring Agency Name and Address  NATIONAL TRANSPORTATION SAFETY BOARD Washington, D. C. 20594				13. Type of Report and Period Covered Aircraft Accident Report	
				14. Sponsoring Agency Code	
15. Supplementary Notes The subject report was distributed to NTSB mailing lists: 1A, 8A and 8B.					
16. Abstract <p>On September 12, 1980, at 2035, a Florida Commuter Airlines Douglas PC-3, N75KW, departed West Palm Beach International Airport, Palm Beach, Florida: for Freeport, Grand Bahama Island, Bahamas, on a passenger flight. About 2058, the aircraft crashed in the Atlantic Ocean about 35 nmi southwest of West End Settlement, Grand Bahama Island. The last transmission received from N75KW was at 2058 when the first officer reported the aircraft was descending out of 3,000 feet and acknowledged clearance for the VOR runway 24 approach at Freeport. At the time, low ceilings and low visibility, coupled with moderate turbulence and thunderstorm activity, prevailed in the vicinity of West End Settlement. The 4 crewmembers and 30 passengers on board the aircraft were killed. The aircraft has not been recovered.</p> <p>The National Transportation Safety Board is unable to determine the probable cause of this accident from the available evidence. Although the Board has been unable to determine the probable cause with any degree of precision, the following factors may have contributed: (1) flight into known thunderstorm activities and turbulence; (2) preexisting discrepancies in the pitot/static system of the aircraft and their effect on the reliability of the flight instruments; and (3) lack of operational control exercised by the airline's management.</p>					
17. Key Words DC-3, pitot/static system, weather-radar instrument meteorological conditions, night, spatial disorientation, lightning, thunderstorm, maintenance, preflight medical certification				18. Distribution Statement This document is available to the public through the National Technical Information Service Springfield, Virginia 22161 (Always refer to number listed in item 2)	
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NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C. 20594

AIRCRAFT ACCIDENT REPORT

Adopted: March 20, 1981

FLORIDA COMMUTER AIRLINES, INC.  
DOUGLAS DC-3, N75KW  
GRAND BAHAMA ISLAND, BAHAMAS  
SEPTEMBER 12, 1980

SYNOPSIS

On September 12, 1980, at 2035, a Florida Commuter Airlines Douglas DC-3, N75KW, departed West Palm Beach International Airport, Palm Beach, Florida, for Freeport, Grand Bahama Island, Bahamas, on a passenger flight. About 2058, the aircraft crashed in the Atlantic Ocean about 3.5 nmi southwest of West End Settlement, Grand Bahama Island. The last transmission received from N75KW was at 2058 when the first officer reported that the aircraft was descending out of 3,000 feet and acknowledged clearance for the VOR runway 24 approach at Freeport. At the time, low ceilings and low visibility, coupled with moderate turbulence and thunderstorm activity, prevailed in the vicinity of West End Settlement. The 4 crewmembers and 30 passengers on board the aircraft were killed. The aircraft has not been recovered.

The National Transportation Safety Board is unable to determine the probable cause of this accident from the available evidence. Although the Board has been unable to determine the probable cause with any degree of precision, the following factors may have contributed: (1) flight into known thunderstorm activities and turbulence; (2) preexisting discrepancies in the pitot/static system of the aircraft and their effect on the reliability of the flight instruments; and (3) lack of operational control exercised by the airline's management.

1. FACTUAL INFORMATION

1.1 History of the Flight

A Florida Commuter Airlines, Inc., Douglas DC-3, N75KW, was scheduled for a 1930<sup>1/</sup> departure on September 12, 1980, from West Palm Beach International Airport, Florida, for Freeport, Grand Bahama Island. About 1300, September 12, the director of flight operations for Florida Commuter Airlines, who was scheduled to fly the aircraft, called in another pilot to fly the aircraft because personal reasons prevented him from working that day. The replacement pilot

1/ All times shown are eastern daylight based on the 24-hour clock.

explained that he was not qualified to fly 14 CFR 135<sup>2/</sup> flights since he was overdue for a 6-month instrument check. The director of operations assured the replacement pilot that the flight was to be conducted under 14 CFR 91 and that, for that reason, he was not required to have a current 6-month instrument check. The pilot then agreed to fly a Part 91 flight. Company personnel told the Safety Board that the flight to Freeport and return was a complimentary trip for friends and company personnel. Testimony of other persons closely associated with the operation of the flight disclosed that the flight was made on the basis of a barter arrangement **as** partial compensation for services rendered to Florida Commuter Airlines and its predecessors.

During the afternoon of September 12, the replacement pilot performed engine and radio checks on N75KW. The aircraft's main tanks were topped off with 240 gallons of 100-octane low-lead fuel; the total fuel load was 420 gallons. The auxiliary tanks contained only residual fuel.

At 1802 on September 12, Miami Flight Service Station received a call from a woman requesting the Freeport aviation surface weather report and terminal forecast for an instrument flight rules (IFR) flight plan for N75KW to Freeport at 1900. The full briefing included the current NOTAMS, the Freeport 1800 weather, and SIGMET Papa 6 which indicated active thunderstorms within the geographic quadrant of N75KW's route of flight.

At 1825, a woman again phoned the Miami Flight Service Station to **file** an IFR flight plan for N75KW from Palm Beach to Freeport. (The first officer on N75KW was a woman.) The Freeport 1822 special weather report and an update on thunderstorm and precipitation activity along the route were provided. The caller was advised that the current Freeport weather was **8** miles visibility with a "thunderstorm right over Freeport now." The route of flight requested in the IFR flight plan was:

West Palm International Airport — BR 63V to Freeport International Airport at an altitude of 5,000 ft and an airspeed of 140 kns with flight time of 35 min en route.

West Palm Beach International was listed as the alternate airport. At 1927:30, N75KW was cleared to Freeport International **as** filed. The aircraft's load manifest form indicated that 4 hours of fuel was on board the aircraft and that there were 30 passengers and 4 crewmembers on board.

<sup>2/</sup> 14 CFR 135.1(3): "The carrying in air commerce by any person, other than as an air carrier, of persons or property for compensation or hire (commercial operations) in aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less and a maximum payload capacity of 7,500 pounds or less."

After receiving clearance, about 1940 the crew of N75KW initiated the takeoff. Shortly thereafter, the crew rejected the takeoff and reported that they had no airspeed indication. The flight was cleared to return to the Butler Aviation facility ramp, and the flightcrew requested that N75KW's flight plan be held open. The passengers were deplaned.

Florida Commuter Airlines' director of maintenance met the aircraft at the ramp about 2011. The first officer stated, "we lost **our** airspeed." The director of maintenance, aided by the lights on the ramp, 3/ saw a reflection from the captain's pitot tube, "something sort of grayish in color." Since the pitot tubes were about 10 ft above ground level, the director of maintenance used a ladder to reach them. He stated that the captain's pitot tube ram air opening was covered with a mud dauber's nest and that another nest partially covered the first officer's pitot tube ram air opening.

After the pitot tubes were cleaned, operation of the airspeed indicators was checked by means of a high-speed taxi run. The aircraft was accelerated down the runway until the tail raised. After the high-speed taxi, the captain told the director of maintenance that "everything was perfectly normal." The passengers were reboarded and at 2027:30, N75KW was taxied to runway 9L. The captain occupied the left cockpit seat; the first officer occupied the right cockpit seat.

At 2035, N75KW was cleared for takeoff with instructions to contact West Palm departure control; at 2037:36 departure control acknowledged radar contact with N75KW. About 2037:50, the first officer confirmed with departure control that N75KW was cleared to climb to 5,000 ft, 4/ to intercept Bahama Route 63V (BR 63V), and to proceed on course. The first officer also reported the aircraft's climbing out of 500 ft. When N75KW was 5 miles east of the West Palm Beach International Airport, the first officer's transmission confirmed to departure control that it was climbing out of 500 ft. At 2042:30, when N75KW was about 4 nmi west of Turps intersection, radar service was handed off to Miami Air Route Traffic Control Center.

At 2042:50, N75KW was advised of weather at 11 o'clock and about 5 miles and was told to contact Miami center. At 2045:04, N75KW contacted Miami center and reported leaving 3,000 ft for 5,000 ft. At 2048:59, N75KW reported level at 5,000 ft. At 2049:23 Miami center cleared N75KW for the approach to Freeport and to cross the Halbi intersection at 4,000 ft. The Freeport altimeter was given as 29.99 inHg. The clearance and altitude restriction were acknowledged by the first officer; the altimeter setting was not acknowledged.

---

3/ Twilight ended at 1956.

4/ All altitudes are mean sea level, unless otherwise indicated.

At 2049:34, the first officer reported to Miami center, "out of five thousand for four thousand;" the flight was now beyond the range of Miami radar. At 2052:07, Miami center advised N75KW that radar contact had been lost 45 nmi east of West Palm Beach International and to contact Freeport approach control. The first officer acknowledged this transmission and at 2055 reported to approach control that the flight was at Halbi intersection.

Approach control then cleared N75KW to the Freeport VOR via BR 63V to descend to and to maintain 3,000 ft. The crew was also provided the following 2050 weather observation:

Ceiling--estimated 2,000 ft broken, 30,000 ft overcast;  
visibility--6 mi; weather--light rain showers; temperature--  
78°F; dewpoint--69°F; wind--180° 12 kns gusting to 26  
kns; altimeter--29.96 inHg; remarks--cumulonimbus,  
all quadrants, rain began 2045.

Freeport approach control asked N75KW to confirm its location at Halbi intersection and to report leaving 4,000 ft. The first officer confirmed the flight's position at Halbi intersection, but did not report descending out of 4,000 ft. A few seconds later Freeport approach control requested N75KW's altitude, and the first officer replied that it was descending through 3,700 ft. Approach control acknowledged this transmission and cleared the flight to descend to 1,400 ft for a VOR approach to land on runway 24 at Freeport and to report leaving 3,000 ft. The first officer acknowledged this clearance and at 2058 reported descending out of 3,000 ft. About 2100, Freeport approach control again requested N75KW to report its altitude; there was no response. Freeport air traffic control then declared an emergency and called the U. S. Coast Guard to search for the aircraft.

About 2210, a C-131 from the U.S. Coast Guard Station at Miami was dispatched to the position last reported by N75KW. The C-131 arrived in the search area about 2243. Aided in part by the lightning associated with the storm activity in the area, the Coast Guard saw bodies and debris floating in the water about 3.5 nmi southwest of West End Settlement, Grand Bahama Island. Freeport controllers later stated that there was "air to ocean lightning" at the time of and in the direction of the crash. The bodies of 16 passengers were recovered. The search was terminated by the U.S. Coast Guard on September 15, 1980. Four crewmembers and 14 passengers are missing and presumed dead. There were no known witnesses to the accident.

The accident occurred during the hours of darkness at 26°39' N latitude and 79°03' W longitude. The water depth at that location is charted as 1,800 feet.

12 Injuries to Persons

<u>Injuries</u>	<u>Crew</u>	<u>Passengers</u>	<u>Others</u>	<u>Total</u>
Fatal	4	29	1*	34
Serious	0	0	0	0
Minor/none	0	0	0	0

\*One person on board was a company official and not a revenue passenger.

13 Damage to Aircraft

The aircraft has not been located or recovered.

1.4 Other Damage

None

1.5 Personnel Information

The captain had passed a first-class medical examination on January 18, 1980. The certificate prescribed the following limitation: "Holder shall wear corrective lenses while exercising the privileges of his airman's certificate." The captain consulted the same medical examiner on August 18, for another first-class medical examination. The medical examiner gave the captain an electrocardiogram (EKG) as required in 14 CFR 67.13. On the basis of that examination, the captain was informed that because of "slight changes" in his electrocardiogram from previous examinations, he was to cease all activities involving flying as a crewmember, until the findings could be further evaluated by the Federal Aviation Administration's (FAA) Aeromedical Certification Branch in Oklahoma City, Oklahoma, and a determination was made as to his condition. He was advised not to fly until hearing from the FAA. 5/ Based on this medical advice, the captain agreed not to act as a crewmember in any activity involving flying. He told the medical examiner that "he was not flying full time anyway," only part time. The medical examiner then scheduled an appointment for the captain to consult a cardiologist for a stress EKG on August 19. The report containing the result of the EKG examination was received by the medical examiner a week to 10 days later. The stress EKG examination disclosed that there was a possible ischemia. Ischemia is defined as "an anginoid condition marked by a feeling of pain behind the sternum coming on during exercise and due to an insufficient supply of blood to the heart." However, according to the cardiologist's report, the captain reported that he did not experience any chest pain, and he attained 85 percent maximal predicted heart rate during the test. On the basis of this examination, the cardiologist scheduled a Thallium cardiac stress test for the captain at the Miami Heart Institute. This test was made on August 28. The report of this test did not reach the medical examiner until September 10, 2 days before the accident. He testified that he did not discuss the report with the captain before the accident. The medical examiner also testified after the accident that he considered the results of the test normal.

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5/ FAA Handbook 8520.3A "Guide for Medical Examiners" Chapter I, A, outlines the authority of a Medical Examiner as follows "Each Aviation Medical Examiner shall have the delegated authority (a) to examine applicants for and holders of airman medical certificates for compliance with the medical standards applicable to the issuance or renewal of airman medical certificates; and (b) to issue, renew, or deny issuance or renewal of airman medical certificates to applicants or holders of such certificates based upon compliance or noncompliance with the applicable medical standards."

The medical histories of the first officer and the two flight attendants contained no evidence of any physical anomalies.

**16**      Aircraft Information

The aircraft was a Douglas DC-3A, U.S. registry N75KW, serial No. 4761, and was equipped with two Pratt & Whitney R1830-92 engines. Its authorized **gross** takeoff weight was 26,200 pounds. The forward center of gravity limit was 239.6 in (11 percent mean aerodynamic chord) and the aft limit was 256.2 in (28 percent mean aerodynamic chord.) The gross weight for this takeoff was 25,873 pounds, and the center of gravity was 21 percent mean aerodynamic chord, which was within limits.

The aircraft had not been flown for about **5** weeks before this flight, and the pitot tubes had been left uncovered during this period. Florida Commuter Airlines did not have pitot covers for its DC-3 aircraft. A copy of N75KW's normal procedures checklist, obtained from the files of Florida Commuter Airlines, did not contain requirements for checks of the pitot tubes (removal and installation of protective covers) or static ports. When questioned during the investigation, maintenance and operational personnel did not know the location of the static ports on N75KW, and the Safety Board could not determine the location of these ports from existing records. It could not be determined if the static ports were checked by the crew at any time prior to the departure of this flight.

According to the director of maintenance, the approved procedure for clearing obstructions from the pitot system would be **to** disconnect the pitot pressure tubing at the instrument and blow out the obstruction with pressurized air. This procedure was not utilized; instead a metal coat hangar and a small screwdriver were used to scrape the obstruction from the pitot **mast**.

**17**      Meteorological Information

At the time of the accident, southern Florida weather was under the influence of a surface trough which was oriented north-northeast and moving south-southwest just north of West Palm Beach. Surface winds were easterly over southern Florida with cumulonimbus low clouds and cumuliform middle and high clouds. The pattern aloft showed southern Florida directly under a low-pressure area extending above 30,000 ft.

The 2050 surface weather observations at Freeport International Airport, Grand Bahama Island, were:

Ceiling--estimated 2,000 ft broken, **30,000** ft overcast;  
visibility--6 mi; weather--light rain showers; temperature--  
78°F; **dewpoint--69°F**; wind--180° 12 kns gusting to 26 kns;  
altimeter--29.96 inHg; remarks--cumulonimbus, all quadrants,  
rain began 2045.

The 1955 weather observations at West Palm Beach International Airport were:

Clouds--2,300 ft scattered, 5,000 ft scattered, ceiling estimated 10,000 ft broken, 30,000 ft broken; visibility—12 mi; weather--none; temperature--80°F; dewpoint--70°F; wind--110° 7 kns; altimeter--29.96 inHg.

Freeport International Airport observations for the period from 1158, September 12, to 0145, September 13, contained the following remarks:

<u>Time</u>	<u>Remarks</u>
1330	Funnel cloud began 1327, movement unknown.
1331	Funnel cloud ended 1331, dissipated east.
2017	Waterspout south-southeast, began 2016.
2026	Waterspout ended 2026.

The 1930 radar overlay from the National Weather Service at Miami showed the western end of Grand Bahama Island was at the northern end of a line of convective activity which included thunderstorms up to level 5 echo intensity. 6/ A level 2 to 3 cell was located just south of West End Airport and a level 5 cell was about 8 miles southeast of Freeport International Airport.

The 2058 radar photograph showed that the moderate rain shower to the southwest had moved about 2 miles southwest of West End and had weakened to light (level 1) intensity. A moderate (level 2) rain shower to the west-northwest was located in about the same area. (See appendix D.) A line of thunderstorms was located from about 50 miles southeast of Miami to about 40 miles south of West End. By 2130, the line of thunderstorms extended in a broken line to Grand Bahama Island, a short distance west of Freeport, and by 2156, the line had become a solid line of heavy thunderstorms with intensities to level 3, crossing Grand Bahama Island in a northeasterly direction in the vicinity of Freeport.

<u>6/ Echo Intensity Level</u>		<u>Rainfall rate (in/hr)</u>	<u>Activity</u>
1	weak	0.05-.2 (light)	Light to moderate turbulence is possible with lightning.
2	moderate	0.2-1.1 (moderate)	Severe turbulence possible, lightning.
3	strong	1.1-2.2 (heavy)	Severe turbulence likely, lightning.
4	very strong	2.2-4.5 (very heavy)	Severe turbulence, lightning, organized wind gusts; hail likely.
5	intense	4.5-7.1 (intense)	Severe turbulence, large hail, lightning, extensive wind gusts, and turbulence.
6	extreme	7.1 (extreme)	

At 2254, 11 minutes after the Coast Guard C-131 aircraft reached the accident site, the line of thunderstorms was well organized with intensities to at least heavy (level 3), crossing Grand Bahama Island between Freeport and West End.

There were no pilot reports (PIREPS) pertinent to the route of flight N75KW at the time of the accident.

International SIGMET Papa 6 was issued by the National Weather Service Forecast Office, Miami, at 1700, September 12, and was valid at the time of the flight of N75KW and through 2100 on September 13, 1980. SIGMET Papa 6 stated:

Active thunderstorms over the Atlantic Ocean in an area along and to 120 nmi either side of a line from 28.5° north, 71° west to 24° north, 79° west. Cumulonimbus tops to above 40,000 ft. Area about stationary. Little change.

The aviation forecast issued by the Weather Department of the Grand Bahama Airport Company for Freeport at 1200, September 12, was valid from 1400 through 0200, on September 13, and contained the following significant features:

A moist unstable air mass covers the Bahamas. Significant weather: over all areas--scattered, occasionally broken cumulus, bases 2,000 to 3,000 ft, tops 14,000 to 16,000 ft with scattered rain showers and a few thunderstorms from isolated cumulonimbus, tops above 24,000 ft. Ceilings and visibilities will be reduced to less than 1,000 ft and 3 nmi in thunderstorms.

## **18 Aids to Navigation**

The Freeport VOR was functioning at the time of the accident. There was no radar at Freeport.

## **19 Communications**

N75KW's radio transmissions to Palm Beach local control were "very scratchy" at times. On one occasion local control advised N75KW that its transmitters were cutting in and out and that local control was not receiving any of the aircraft's transmissions.

Palm Beach departure control and Miami center also experienced communication difficulties with N75KW. Communication was not possible on several of the aircraft radio frequencies. After communications were established, all control instructions were adhered to.

Communications between Freeport approach control and N75KW on frequency 126.5 MHz were not recorded because the recording function at Freeport on that channel was inoperative. The Freeport approach controller stated that the flightcrew did not indicate any change in plans or any sort of distress.

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**1.10 Aerodrome Information**

Not applicable

**1.11 Flight Recorders**

The aircraft was not equipped with either cockpit voice recorders or flight data recorders, nor were they required.

**1.12 Wreckage and Impact Information**

The wreckage was not recovered. Small amounts of debris consisting of seat cushions and plywood bulkheads were recovered in the general area where the bodies were recovered.

**1.13 Medical and Pathological Information**

Sixteen victims were recovered by the U.S. Coast Guard and taken to the Broward County medical examiner's facility for post-mortem examinations and X-rays. Results of the X-rays showed no evidence of shrapnel or other metallic missiles. Results of the autopsies showed no evidence of burns to any of the bodies.

The report of the chief medical examiner indicated that the majority of victims died "from drowning associated with multiple injuries." In most cases, the injuries were extensive enough to have caused death within minutes to hours after impact. All but one of the victims manifested signs of drowning. However, all of the victims were "probably unconscious immediately after impact." Tests for carbon monoxide conducted on the victims were negative. None of the flight crewmembers were recovered.

**1.14 Fire**

There was no evidence of fire either before or after impact.

**1.15 survival Aspects**

No liferafts were on board the aircraft nor were they required. The aircraft was equipped with individual lifevests for the passengers. One of the bodies recovered had a lifevest draped over one arm. Since the aircraft was not recovered and the condition of the fuselage is unknown, the Safety Board was not able to determine whether this accident was survivable. The recovered bodies showed no evidence of high g forces associated with high-speed or uncontrolled impact with the water.

**1.16 Tests and Research**

None

**1.17 Other Information**

### 1.17.1 Operating History and Certification of Florida Commuter Airlines

Scheerer Air, Inc., doing business as Florida Commuter Airlines, Inc., evolved directly from Roberson Air, Inc., which did business as Red Baron Air. Red Baron Air was formed on June 11, 1979, as a joint venture of Clive E. Roberson, M.D. and Rudolph P. Scheerer, M.D. Florida Commuter Airlines is headquartered at Palm Beach International Airport, Florida.

A special evaluation of Roberson Air was conducted on May 19 to 23, 1980, by an FAA Special Investigative Team. The evaluation revealed that Roberson Air was not eligible for, or capable of conducting, operations in compliance with 14 CFR 135. The following excerpt is from the team's findings of noncompliance:

The DC-3 flight manuals were missing up to **as** many as 20 pages. The condition of the company's manuals made it difficult to determine accurately the compliance status of the carrier. Because each page **of** the manual contained an FAA-approved stamp and an inspector's signature, it was difficult to recommend enforcement action where procedures were inadequate, failed to comply, or just quoted the FAR's [Federal Aviation Regulations] .

The investigative team recommended that enforcement action be taken because of discrepancies found in the maintenance manual contents. The team also recommended that complete recertification under 14 CFR 135 be required before allowing resumption of operations.

Roberson Air voluntarily ceased operations on May 23, 1980, and placed its air carrier certificate and operations specifications in the custody of the Miami General Aviation District Office (GADO) until such time **as** it was able to comply with 14 CFR 135.

Before its air carrier certificate was returned on May 30, 1980, correction of the discrepancies was verified by an on-the-scene inspection by GADO **No. 5**, located in Opa Locka, Florida.

On June 13, 1980, Scheerer Air acquired 100-percent control of Roberson Air according to Doctor Scheerer "to unify management and direct a full effort towards the commuter airlines market." Except for Doctor Roberson, the management structure and personnel of Scheerer Air was similar to that of Roberson Air.

On July 24, 1980, Scheerer Air doing business as Florida Commuter Airlines, received Air Carrier Operating Certificate No. AT 705-172 from GADO' **No. 5**. The airline was certificated under 14 CFR 135 as both a commuter and a charter operator. The certificate provided for the use of a Piper Navajo and two Douglas DC-3's. The DC-3's were authorized to be used for on-demand charter and commuter air carrier VFR **or** IFR day and night operations.

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In August 1980, the management/consultant team of Mitchell, MacLeod, and Gelsomino was retained to assist in reorganizing Florida Commuter Airlines. The team recommended to the president of the airline that the general manager be asked to resign because he did not have the management capability or experience to successfully run a growing commuter airline operation. During deposition proceedings conducted by the Safety Board, the general manager acknowledged that he was aware the team had recommended his resignation.

An interline agreement was signed between Florida Commuter Airlines and Air Florida effective September 9, 1980. Negotiations had also been concluded with Eastern Airlines providing Florida Commuter Airlines with a bilateral and interline agreement with Eastern.

Florida Commuter Airlines was one of about 95 Part 135 operations monitored by GADO No. 5. Four principal operations inspectors accomplished this monitoring, in addition to other duties, such as giving general aviation flight tests and proficiency checks. One of the principal operations inspectors visited Florida Commuter Airlines and its predecessor about once every 3 months.

## 2 ANALYSIS

Because of the lack of conclusive evidence, the Board did not make a determination whether the accident flight was conducted under the provisions of 14 CFR 91 or 135. Although the director of flight operations told the captain that it was a Part 91 flight, he may not have been familiar with, or had first-hand knowledge of, the arrangements made for the flight by other company officials. The company's acceptance of compensation or other consideration would have constituted a Part 135 operation.

The flight departed West Palm Beach International Airport within the authorized weight and balance limits. The aircraft had sufficient fuel on board to reach its destination and return.

1 The captain was not operationally qualified for the flight because he lacked the recent night experience of three takeoffs and landings to a full stop in a DC-3 aircraft as required in 14 CFR 61.57(d). If the flight in fact was made under the provisions of 14 CFR 135, the captain would not have been medically qualified because he had not been issued a first-class medical certificate as a result of the irregularity in his EKG. Additionally, he would not have met the instrument proficiency check requirements of 14 CFR 135.297.~

The Safety Board could not determine if the Captain believed that the EKG anomaly found during his examination for a first-class medical certificate was, in fact, disqualifying as far as it concerned the privileges he could exercise with his second-class medical certificate, or that it was a known physical deficiency as defined in 14 CFR 61.53, 7/ which would disqualify him for any duties

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7/ 14 CFR 61.53, Operations during medical deficiency: No person may act as pilot in command, or in any other capacity as a required pilot flight crewmember while he has a known medical deficiency, or increase of a known medical deficiency, that would make him unable to meet the requirements for his current medical certificate.

as a flightcrew member. A valid second-class medical certificate would have satisfied the medical certification requirements for a flight conducted under the provisions of 14 CFR 91. The Board is, however, concerned over the apparent laxity in guidance material for medical examiners in cases where immediate termination of flight activities by an airman would be in the interest of public safety. The Board believes that an Aviation Medical Examiner should be required to transmit immediately any medical deficiency he has identified to the Aeromedical Certification Branch in Oklahoma City so that action with regard to a medical certificate can be effected without delay and a formal record of such a deficiency is established immediately.

The flightcrew conducted an inadequate preflight inspection of the aircraft. Their failure to check the pitot tubes required an aborted takeoff because of a lack of airspeed indication. Responsibility for this condition must also be shared by Florida Commuter Airline management personnel for failure to incorporate a requirement for a check of the pitot/static system in the airplane preflight checklist and for not having in its possession, or requiring the use of, pitot tube covers on company aircraft. None of the pilots and operational personnel employed by Florida Commuter Airlines knew the location of the static ports on N75KW. Prudent maintenance personnel and flightcrew, knowing that the aircraft had been inactive for 5 weeks parked in an unprotected area, should have secured suitable ladders or other equipment to conduct a thorough check of the pitot tubes and other critical items which were not readily accessible from the ground. The captain should have been particularly familiar with this aspect of the operation since he had been previously employed by the company. The failure of maintenance and flight personnel to ensure an adequate preflight inspection is indicative of a lackadaisical attitude toward items vital for safe flight and reflects an unsatisfactory concern for safety in general.

The procedure used by the director of maintenance to clean the obstructions from the pitot tubes was not an approved or recommended procedure. The procedure the flightcrew used to check the operation of the airspeed indicators was not a recommended procedure. A high-speed taxi run down a runway provided no assurance that all obstructions had been removed from the pitot tubes or that the system was functioning properly.

The evidence indicates that the flight proceeded without major problems until 2058 when the first officer reported N75KW out of 3,000 ft for the approach. Throughout the approach, the first officer handled the radio communications between the aircraft and ground facilities. The normal allocation of flight-deck workload would indicate that the captain was flying N75KW during the descent into Freeport.

The DC-3 airplane flight manual recommends a rate of descent not greater than 300 ft per minute below 8,000 ft. Florida Commuter Airlines pilot personnel stated that company policy recommended a descent rate not greater than 500 ft per minute at an indicated airspeed of 105 kts. If the flightcrew adhered to the company's recommended descent rates, then beginning at 2058 when the first officer reported out of 3,000 ft until 2100 when Freeport approach attempted to call N75KW, the aircraft should have descended about 1,000 ft to an altitude of

about 2,000 ft. The fact that N75KW experienced no communication difficulties with Freeport approach before 2058 suggests that whatever befell the flight during the 2-minute period between 2058 and 2100 occurred quickly and without warning, or the flightcrew was so preoccupied in attempting to control the aircraft that communications were either impossible or impractical. Otherwise, the flightcrew should have been able to alert Freeport approach control of any problems.

Analysis of the facts related to this accident is difficult because there were no known witnesses to the crash and the aircraft was not recovered. Therefore, the Board has attempted only to discuss the plausible possibilities relative to the known facts, conditions, and circumstances of this accident. Sabotage, or foul play, has been discounted by the Federal Bureau of Investigation and has not been considered in this evaluation. In this regard, the Board believes that the more plausible areas of cause include a premature descent into the water due to possible inaccurate airspeed and altitude indications, turbulence, lightning strike, flightcrew disorientation, or a combination thereof.

A strong possibility would be the intensity of thunderstorm activity in the atmosphere in the vicinity of N75KW's route of flight. It is reasonable to assume that lightning may have struck the airplane or that severe lightning occurred close to its flightpath. A lightning strike can damage the electrical system—cockpit lighting, communications and navigation instruments. If the cockpit lighting was not restored immediately, either by a redundant aircraft system or by use of a portable hand-held light, controlled flight would not have been possible because the vacuum-operated primary flight instruments would not have been visible. Although both flightcrew members had been observed in the past to carry a portable light, it could not be determined if a light was available and operable on the night of the accident.

X Another possibility is that one or both flightcrew members may have experienced spatial disorientation. The flightcrew's lack of recent instrument experience' in weather, similar to that which they encountered on the night of,, September 12, 1980, would have increased the likelihood of spatial disorientation. Spatial disorientation would have been aggravated by lightning flashes. When a bright light, such as lightning, temporarily "blinds" a pilot on a dark night, it may require several minutes for his eyes to recover normal visual acuity. During the recovery period he will see an after-image. This illusion may present problems if the control point of vision is affected or if the light is unusually bright. The extensive electrical activity that prevailed in N75KW's flight area might have made it difficult for the flightcrew to recover from the momentary loss of visual acuity, particularly if this condition was accompanied by turbulence usually associated with thunderstorm activity.

) In addition, the pitot/static system involvement as a factor in the accident is also considered a possibility. The predeparture failure of the airspeed indication system coupled with the standard maintenance procedure to remedy the problem were considered during the investigation. Only if the pitot tubes were disconnected downline from their external openings and blown out could one be certain that the pitot tubes were free of obstructions. However, notwithstanding the improper maintenance procedure, the loss of airspeed indications alone should

not be critical to controlled flight. Engine power settings and the attitude reference instrument can be used to compensate for the complete failure of the airspeed indicator(s). Moreover, a prudent flightcrew would have been sensitive to any erratic or conflicting indications in the airspeed system because of its predeparture failure. However, the loss of airspeed indication in combination with other factors, such as turbulence or flight crew disorientation, could have had a significant effect on the ultimate ability of the flightcrew to cope with the conditions they encountered.

The operational status of the altimeter static system was not positively determined. However, the Safety Board found no evidence to indicate that this system was ever checked on a routine preflight basis by maintenance or pilot personnel since the Florida Commuter Airlines' director of maintenance and flight personnel either could not recall or did not know the location of the static ports on the airplane. Since there were obstructions in the pitot tubes before the flight's departure because the aircraft had been parked outdoors, exposed to the elements, the Board believes that the static ports likewise could well have been subject to ingestion of contaminants and consequent blockage or partial restriction. If the static ports were in fact partially blocked, the altimeter and vertical speed indicators could have given false and misleading information. While the Board finds this premise a plausible possibility and therefore a matter of concern, there is no evidence to support direct involvement of the static system.

Although the aircraft was operated during the hours of darkness in an area of forecast thunderstorm activity, it was not equipped with, nor was it required to have, thunderstorm detection equipment. This accident focuses attention on the fact that the DC-3 is exempt from the on-board weather detection equipment requirements simply because it was certificated before the enactment of the Transport Category Rules of the Federal Aviation Regulations. Thunderstorms and other forms of severe weather can be detected by airborne thunderstorm detection devices which enable the flightcrew to avoid a potentially unsafe flightpath. The Safety Board is concerned that the FAA continues to permit the operation of large aircraft into severe weather conditions without such equipment. Other transport aircraft used to carry passengers under either 14 CFR 135 or 14 CFR 121 are required to be equipped with such detection devices.

The failure of the airline's management to exercise adequate operational control either directly or through the director of operations, and the captain's lack of judgment in initiating a flight into an area of forecast thunderstorm activity at night without any means to avoid flying into unknown conditions are also matters of concern.

In summary, the Board concludes that the manner in which the flight was planned and the maintenance performed on the aircraft are totally inconsistent with a level of safety which should be expected from a passenger-carrying operation.

### 3. CONCLUSIONS

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#### Findings

1. The captain was not operationally qualified for the flight as required by 14 CFR 61.
2. There is no evidence that medical factors might have affected the captain's performance.
3. The first officer was qualified and properly certificated for the flight.
4. Neither the flightcrew nor maintenance personnel checked the pitot tubes or static ports during their preflight inspection of the aircraft.
5. The captain's airspeed indicator was inoperative during the initial takeoff roll due to blockage in the pitot tubes.
6. An improper maintenance procedure was used to remove the blockage from the pitot tubes. ■ ●
7. Florida Commuter Airlines' maintenance and pilot personnel did not know the location of the static ports on N75KW.
8. N75KW departed Palm Beach within the authorized weight and balance limits.
9. The aircraft had sufficient fuel on board to reach its destination and return to its point of departure.
10. The captain was flying the aircraft during the approach into Freeport.
11. The meteorological conditions encountered by the flightcrew were conducive to heavy turbulence, severe wind shear, lightning and spatial disorientation.
12. The aircraft was not equipped with thunderstorm detection equipment, nor was such equipment required.
13. Airline management failed to exercise adequate operational control.

32            **Probable Cause**

The National Transportation Safety Board is unable to determine the probable cause of this accident from the available evidence. Although the Board has been unable to determine the probable cause with any degree of precision, the following factors may have contributed: (1) flight into known thunderstorm activities and turbulence; (2) preexisting discrepancies in the pitot/static system of the aircraft and their effect on the reliability of the flight instruments; and (3) lack of operational control exercised by the airline's management.

**4. SAFETY RECOMMENDATIONS**

As a result of this accident, the National Transportation Safety Board recommended that the Federal Aviation Administration:

Require **all** aircraft used in revenue passenger operations which are not presently required to be equipped with an approved weather detection device under **14 CFR 121** or **14 CFR 135** to have an appropriate airborne weather detection device that is in satisfactory operating condition when flight under IFR or night VFR conditions is anticipated and current weather reports indicate that thunderstorms or other potentially hazardous weather conditions that can be detected with an airborne weather detection device may reasonably be expected along the route to be flown. (Class II, Priority Action) (A-81-35).

**BY THE NATIONAL TRANSPORTATION SAFETY BOARD**

/s/    JAMES B. KING  
Chairman

/s/    ELWOOD T. DRIVER  
Vice Chairman

/s/    FRANCIS H. McADAMS  
Member

s/s    G.H. PATRICK BURSLEY  
Member

PATRICIA A. GOLDMAN, Member, did not participate.

March 20, 1981.

5. APPENDIXES

APPENDIX A

INVESTIGATION AND HEARING

Investigation

The National Transportation Safety Board was notified of the accident ,at 2200 e.d.t., on September 12, 1980. An investigative team was dispatched at 0800 on September 13, 1980. Investigative groups were established for operations, air traffic control, witnesses, human factors, weather, and aircraft records.

Parties to the investigation were the Federal Aviation Administration, Florida Commuter Airlines, Inc., and the Federal Bureau of Investigation.

The National Transportation Safety Board did not hold a public hearing during the investigation but did take depositions from persons involved in the preparation and operation of the flights.

**APPENDIX B**

**PERSONNEL INFORMATION**

Captain William Hugo Selva, Jr.

Captain Selva, 44, was employed by Roberson Air, Inc., D/B/A Red Baron Air, predecessor of Scheerer Air, Inc. D/B/A Florida Commuter Airlines, Inc., as director of operations and chief pilot from November 13, 1979, until February 22, 1980. He held airline transport pilot certificate No. 1346896 dated August 4, 1971, with ratings in the DC-3 and commercial privileges single-engine land. His first-class medical certificate, issued on January 18, 1980, had the following limitations: "Holder shall wear corrective lenses while exercising the privileges of his airman's certificate." A report of a medical examination dated January 18, 1980, indicates that Captain Selva had taken Hydrodiurel but had taken no medication for hypertension for 1 year.

According to available pilot and employment records, Captain Selva had accumulated about 6,600 flight-hours, 1,700 hours of which were in the DC-3. Total instrument and night time was about 324 hours and 374 hours respectively. He passed a 6-month IFR proficiency check and line check on January 19, 1980. The flight report indicated that he had satisfactorily completed all maneuvers.

Captain Selva's personal flight log has not been recovered.' It is believed that this personal record was in his possession at the time of the accident. Florida Commuter Airlines' employment records on Captain Selva were not made available to the investigative team. The reason given by company officials was that the records were either lost or misplaced.

The flight times of Captain Selva for the 6 months before the accident were tabulated based on the company records of Florida Airmotive and Roberson Air, Inc. Aircraft flight and maintenance logs of Roberson Air, Inc., in which the name "W.H. Selva" appeared to the right of the block entitled "captain's signature," were compared with the first officer's flight and duty time records with the same date. The resultant calculations indicate that Captain Selva's flight time (all in DC-3 aircraft) were as follows:

Hrs

43	as pilot-in-command
1.2	as first officer
43	day VFR
1.5	night
7.6	actual instrument (per company policy, first officers log half of the instrument time encountered during a flight)

Captain Selva's flight times the previous 90 days amounted to eight-tenths of an hour as pilot-in-command and 1.2 hours as first officer. These flight times were accrued on June 16, 1980, in a DC-3 aircraft under day VFR conditions.

Captain Selva resigned as director of operations and chief pilot of Roberson Air, Inc., doing business as Red Baron Air on February 22, 1980. His letter of resignation reads in part:

The usurping of operational control and authority has rendered the office of Director of Operations and Chief Pilot ineffectual. This places one in the untenable position of being held fully responsible without any authority.

A letter signed by the company's general manager/executive vice president dated February 29, 1980, acknowledged Captain Selva's resignation. The letter did not address or respond to the captain's reasons for resigning.

#### First Officer Diana Claire Leonard

First Officer Leonard, 25, was initially employed by Roberson Air, Inc., doing business as Red Baron Air, predecessor of Scheerer Air, Inc., D/B/A Florida Commuter Airlines as first officer on or about December 19, 1979. She served as first officer on DC-3 aircraft. First Officer Leonard held commercial pilot certificate No. 565 68 8703, issued on February 6, 1979, for airplane single- and multiengine land instrument airplane. Her first-class medical certificate, issued on April 11, 1980, had no limitations.

First Officer Leonard completed DC-3 ground training on December 21, 1979, and DC-3 flight training (16.2 hours) on January 29, 1980. According to a resume, Ms. Leonard had accumulated about 620 flight-hours before she was hired with Roberson Air, Inc. Company records indicate that she had accumulated about 240 flight-hours since she was initially hired by Roberson Air, Inc; about 150 hours were in DC-3 aircraft. In the previous 90 days, she had flown about 118 hours, 19 hours of which were in DC-3 aircraft. Of her total time during this 90-day period, about 8 hours were in actual instrument conditions.

#### Flight Attendants

The two flight attendants, Ms. Jennifer Kruger and Ms. Suzie Payne, were qualified in the DC-3 in accordance with applicable regulations and had received the required emergency evacuation training.

APPENDIX C

AIRCRAFT INFORMATION

The aircraft was manufactured by the Douglas Aircraft Corporation as a Model C-53, S/N 41-20091. The aircraft was delivered to the U.S. Army on January 16, 1942. After World War II, the aircraft was obtained by Northeast Airlines, converted to a DC-3A, and assigned serial No. 4861. Since the time the aircraft was sold by Northeast Airlines, it had been used by several airlines and other operators. Postaccident testimony showed that the aircraft was not maintained in accordance with existing regulations and requirements.

The aircraft was equipped with two Pratt & Whitneg R1830-92 engines and two Hamilton Standard Model 23350 propellers.

No. 1 engine

SIN 302048  
TSI 133.5 hrs  
TSO 133.5 hrs

No. 2 engine

S/N BP464801  
TSI 748.1 hrs  
TSO 748.1 hrs

No. 1 propeller

SIN P321352  
TSO 974.57 hrs

No. 2 propeller

S/N 339456  
TSO 2206.2 hrs

Airframe - S/N 4861

	<u>Date</u>	<u>Total time (hrs)</u>
Last Major Overhaul	December 13, 1974	57,279.6
Last 100 hr D Inspection	December 15, 1979	64,567.1
Last 50 hr Service Check	April 5, 1980	64,615.0
Last 100 hr A Inspection	May 7, 1980	64,663.4

The last 100-hour and 50-hour inspection work sheets and discrepancy sheets were reviewed; no discrepancies were noted.

The records indicated that the aircraft had received the last 12,000-hour inspection on December 13, 1974. During the 12,000-hour inspection, the gross takeoff and landing weight were increased to 26,200 pounds by complying with Douglas Service Bulletin No. 242Y407.

An FAA Major Repair and Alteration Form 337, dated May 24, 1977, indicated that the rudder had been removed, stripped, cleaned, inspected, recovered, and painted. It was also stated that the rudder was not balanced at this time. A review of the records did not reveal when, or if, the rudder was ever balanced.

Another FAA Major Repair and Alteration Form 337, dated June 16, 1980, indicated that both elevators, the elevator torque tube assembly, and right outboard elevator hinge bracket had been replaced, and the elevators system rigged. In addition, the pilot and copilot aileron yoke chains were replaced, and the aileron system rigged. The aircraft was test flown, and no discrepancies were noted. The aircraft total time on this date was 64,681.3 hours.

The aircraft had been flown 19.2 hours since June 16, 1980. The last aircraft logbook page No. 0025, dated July 29, 1980, indicated the aircraft total time as 64,700.5 hours. The records indicated that the aircraft had not been flown since July 29, 1980, until the day of the flight which was terminated by the accident.

A review was made of the Airworthiness Directives (AD's) accomplished, and all applicable AD's were recorded and complied with.

