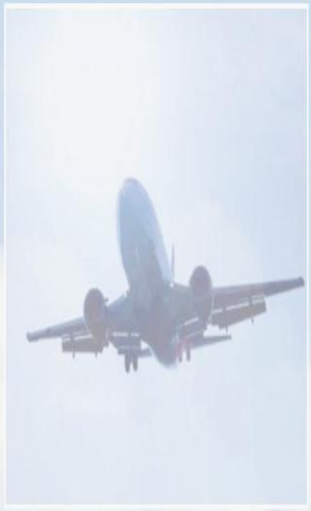

AIRCRAFT ACCIDENT REPORT

FSI FILE # A0619836

FINAL REPORT
Loss of Control after Takeoff

Blackhawk International Airways
Cessna 402B
N8097W
Marsh Harbour, Abaco, Bahamas
25 August, 2001

TABLE OF CONTENTS

Accident Final Report
FSI FILE # A0619836

In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of aircraft accident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the prevention of accidents and incidents.

INTRODUCTION

Operator:	**Blackhawk International Airways**
Manufacturer:	Cessna Aircraft Company
Model:	C402B Serial Number 402B1014
Nationality:	United States of America
Registration:	N8097W
Place of Accident:	Marsh Harbour International Airport, Marsh Harbour, Abaco Bahamas
Date of Accident:	August 25th 2001
Investigating Authority:	Flight Standards Inspectorate
Investigator in Charge:	Randy Butler- Flight Standards Inspectorate
Notification:	Aircraft Manufacturer - Cessna Aircraft Company Propeller Manufacturer – McCauley Propellers Engine Manufacturer - Teledyne Continental Motors Federal Aviation Administration (FAA) National Transportation Safety Board (NTSB)
Releasing Authority:	Bahamas Civil Aviation Department Mr. Cyril Saunders - Director
Date of Report:	August 30, 2006

Mrs. Glenys Hanna-Martin
Minister of Transport and Aviation

Mr. Cyril Saunders
Director of Civil Aviation

Captain Patrick Rolle
Manager, Flight Standards Inspectorate

The attached report summarizes an investigation made into the circumstances of an accident involving Cessna C402B aircraft, Registration N8097W, Serial Number 402B1014 that crashed shortly after takeoff from Marsh Harbour International Airport, Marsh Harbour, Abaco, Bahamas, on August 25, 2001 resulting in nine (9) fatalities.

This report is submitted pursuant to Part XII, Regulation 80, and Schedule 19 of the Bahamas Civil Aviation (Safety) Regulation (17 April 2001) and in accordance with Annex 13 to the Convention on International Civil Aviation (ICAO).

_____

Aviation Safety Inspectors
Flight Standards Inspectorate
Bahamas Civil Aviation Department

August 30, 2006

Methods of Investigation - This investigation was conducted at the mishap site, as well as off site where engine teardown and propeller disassembly occurred. On the investigation team were:

Randy L. Butler *Nassau, Bahamas*	*Investigator- in-Charge* *Bahamas Civil Aviation Department*
Philip C. Romer *Nassau, Bahamas*	*Aviation Safety Inspector* *Bahamas Civil Aviation Department*
Walter V. Evans *Nassau, Bahamas*	*Aviation Safety Inspector* *Bahamas Civil Aviation Department*
Charles Fedderwitze *Melbourne, Florida*	*Aviation Safety Inspector* *Bahamas Civil Aviation Department*
Al Yurman *Miami, Florida*	*Accident Investigator* *National Transportation Safety Board*
T. R. Proven *Washington, DC*	*Accident Investigator* *Federal Aviation Administration (FAA)*
Tom Roper *Miami, Florida*	*Aviation Safety Inspector* *Flight Standards District Office (present at propeller review)*
Johns Bures *Fort Meyers, Florida*	*Representative* *Teledyne Continental Motors*
Fred Fihe *Mobile, Alabama*	*Representative* *Teledyne Continental Motors (present at fuel control review)*
John Barker *Mobile, Alabama*	*Representative* *Teledyne Continental Motors*
Tom Moody *Wichita, Kansas*	*Air Safety Investigator, Sr.* *Cessna Aircraft Company Dept 175*
Tom Knopp *Vandalia, Ohio*	*Representative* *McCauley Propellers (present at propeller review)*
Wayne Edmonds *Vandalia, Ohio*	*Representative* *McCauley Propellers (present at propeller review)*
Craig Walker *Margate, Florida*	*Representative* *Houston Casualty (Insurance)*
Air and Sea Recovery *Deerfield Beach Florida*	*Salvage*

Report compiled and completed by: *Delvin Major*
Dion Demeritte
Philip Romer

SECTION A ABBREVIATIONS AND TERMINOLOGY

ADDS	Aviation Digital Data Service
AGL	Above Ground Level
BASR	Bahamas Aviation Safety Regulations (April 17, 2001)
BDCA	Bahamas Department of Civil Aviation
BCAD	Bahamas Civil Aviation Department
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CAD	Civil Aviation Department
CFR	Code of Federal Regulations
CG	Center of Gravity
DCA	Director of Civil Aviation
DOT	Department of Transportation (USA)
EDT	Eastern Daylight Time (+5 hours to convert to UTC, GMT or Zulu time)
FAA	Federal Aviation Administration
FSI	Flight Standards Inspectorate
FT / ft	Feet
ICAO	International Civil Aviation Organization
IFO	International Field Office (FAA)
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Condition
MEL	Minimum Equipment List
METAR	Meteorological Aerodrome Report
NM or nm	Nautical Miles
NTSB	National Transportation Safety Board
SARP's	Standards and Recommended Practices
UTC / Z	Universal Coordinated Time (time reference to Greenwich Mean Time same as Zulu)
USA	United States of America
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
Z / UTC	Zulu refers to time reference to Greenwich Mean Time (Same as UTC)

SECTION B SYNOPSIS

At approximately 1845EDT on August 25, 2001 at the Marsh Harbour International Airport, Marsh Harbour, Abaco, Bahamas, a Cessna 402B utility liner aircraft, Registration N8097W, operated by Black Hawk International Airways crashed shortly after takeoff from Runway 27.

The state of registry (United States of America (USA) was notified. The manufacturers of the airframe, engine and propeller were also advised of the accident and invited to participate in the investigation.

Visual Meteorological Conditions (VMC) prevailed at the time of the accident with winds reported from the east at 3-4 knots and a temperature of 86˚ Fahrenheit. The aircraft sustained substantial damages. There were eight (8) passengers and one (1) crew aboard the aircraft. The pilot in command held a commercial pilot rating and was certificated by the Federal Aviation Administration, (FAA). The pilot had passed a VFR Part 135 check ride in a Cessna 402B aircraft on November 26, 2000

SECTION C OVERVIEW OF THE ACCIDENT

At approximately 1845 EDT on August 25, 2001 during a downwind departure on Runway 27 at Marsh Harbour Airport (MYAM), Abaco, Bahamas, a nine seat configured Cessna 402B aircraft, Registration N8097W, was observed to lift off and climb in a steep, nose high attitude, to approximately 40ft AGL.

The aircraft banked left, pitched nose down, and impacted marshy terrain in a left winged, nose-low attitude. The aircraft cart-wheeled before coming to rest on an easterly heading, 300ft abeam the end of the runway.

The fatal aircraft debris field covered an area approximately 135 square ft. located on the southern side of Runway 27. The aircraft was substantially damaged and there was a post-impact fire. All occupants (9) were fatally injured from impact trauma and / or injuries sustained in the post impact fire.

SECTION 1 FACTUAL INFORMATION:

1.1 HISTORY OF THE FLIGHT

The fatal aircraft, Registration N8097W was operated by Blackhawk International Airways and the listed owner was Skystream Inc; whose corporate address was the same as Mr. Gilbert Chacón's Pembroke Pines, Florida home address **(See Appendix 4).** Blackhawk International Airways was owned by Gilbert Chacón and his son Erik, who founded the company in 1991.

Blackhawk International Airways was authorized by the FAA as a part 135 Single Pilot Operation. Mr. Gilbert Chacon was the only pilot authorized by the FAA for Blackhawk International Airways. Once Morales acted as pilot in command of the Cessna 402B aircraft, this made Blackhawk International Airways a multi pilot operation. This was a clear violation of the FAA regulations. Mr. Morales was not signed off by the FAA to fly for Blackhawk International Airways, nor was Blackhawk International Airways signed off as a multi pilot operation.

There were no FAA reports of any enforcement actions or service difficulty reports against the fatal aircraft. However, the FAA did report four administrative actions against Blackhawk International Airways, three for technical violations and the most recent for maintenance failures. The agency (FAA) issued a letter of correction on April 28, 2000, citing Blackhawk's failure to comply with manufacturer's recommended maintenance programs and FAA programs for its aircraft's engines or other parts. Blackhawk failed to have a person in charge of maintenance with an appropriate certificate and used unsanctioned techniques and equipment for repairs.

The Manager of the Palm Beach County Park Airport at Lantana, Florida stated that a last minute change resulted in the accident aircraft being dispatched to Marsh Harbour, Abaco, Bahamas. The Cessna 404 aircraft which was originally scheduled to conduct this flight, was fuelled, but subsequently changed to a Cessna 402B aircraft by the owner Mr. Gilbert Chacon

This charter flight from Lantana, Florida to the island of Marsh Harbour, Abaco, in the Bahamas, was operated under Visual Flight Rules (VFR).

The accident occurred on August 25, 2001 shortly after the aircraft departed Marsh Harbour International Airport for the return trip to Opa Locka, Florida (USA).

The flight number was not known. At the time of the accident, Blackhawk International Airways was not authorized by the Bahamas Aviation Authority to conduct commercial operations in the Bahamas. A determination could not be made as to whether or not the pilot filed a flight plan. No records existed to verify whether radio communications were established with Air Traffic Control (ATC) during the flight from Lantana, Florida to Marsh Harbour, Abaco, Bahamas.

The flight was a 165 mile journey that was estimated to take one (1) hour to complete. The aircraft was not required to have a cockpit voice recorder.

Witnesses reported the pilot and members of the group being transported, argued about the number of passengers and the amount of bags to be loaded on the aircraft. Witnesses also reported seeing eight (8) passengers board the aircraft. Two of the largest passengers (believed to be weighing approximately 300 pounds each,) were observed being seated in the rear of the aircraft. One witness reported that the pilot personally loaded the aircraft. Witnesses also reported that the pilot experienced problems starting the engines.

Eye witness statements placed the time of departure of the flight for Opa Locka, Florida at approximately 1845 EDT. The aircraft became airborne from the 5,000 x 50 feet runway (Runway 27) between 2,500 to 2,800 feet. It climbed in a steep nose high attitude to approximately 40 feet above the runway, banked left, pitched nose down and impacted marshy terrain in a left wing, nose low attitude. **For summary of witnesses statements refer to Appendix 9 Witness Statements.**

1.2 INJURIES TO PERSONS

Nine (9) Fatalities (pilot and eight passengers) refer to **Appendix 10 Injury Report.**

1.3 DAMAGE TO AIRCRAFT

Aircraft substantially damaged, see **APPENDIX 12 Onsite Investigation**

1.4 OTHER DAMAGE

No other damage reported.

1.5 PILOT INFORMATION

Captain Luis Antonio Morales III was born in Santurce, Puerto Rico. He was 30 years old. A review of his logbook revealed the following;

- Flight training started in 1985.
- A private pilot airplane single engine land licence #58299365 was obtained on 7/20/1999 at approx 63 hours total time.
- A check ride was accomplished in the year 2000 at a total time of 198.3 hours.

- A commercial / multi engine check ride was accomplished on 9/14/2000 in a PA-28-151 N56786 at 354.2 hours total time.

- On 11/14/00 an unexplained 278.7 hours was added to log book and therefore total time and multi engine time, increased by this amount.
- Also on this date;
    - Landings - day, increased by 121 landings
    - Landings – night, increased by 81 landings
    - Cross country increased by 78.9 hours
    - Solo flight increased by 211.7 hours
    - Pilot in command time increase by 211.7 hours
    - Dual time received increased by 67 hours

- On 7/29/01 pilot log book summary showed;
    - Total flight time as 1098.8 hours
    - Total multi engine time 588.8 hours
    - Total day landings 974 landings
    - Total night landings 187 landings
    - Total cross country 680.3 hours
    - Total PIC time 916.2 hours
    - Total actual instrument 189.1 hours

- On 8/17/01, just nineteen (19) days later, pilot summary totals showed total brought forward times as;
    - Total multi engine 1,588.8 hours, an increase of 1,000 hours
    - Total day landings 1,974 hours, an increase of 1,000 hours
    - Total night landings 587 hours, an increase of 400 hours
    - Total cross country time 1,680.3 hours, an increase of 1,000 hours
    - Total actual instrument 789.1 hours, an increase of 600 hours

- On 8/21/01 pilot log book showed a brought forward total of;
    - Total duration of flight 1131.8 hours
    - Airplane single engine land 509.0 hours
    - Airplane multi engine land 1621.0 hours
    - Landings day 2,010
    - Landings night 587
    - Actual instrument 809.0 hours
    - Cross country 1,713.3 hours
    - Pilot in command 1949.0 hours

- A part 135 check ride was recorded on 11/26/2000 in a C402 aircraft, registration N856D. The FAA database showed that this aircraft was registered to Corporate Charter Services, Inc. of Ft Lauderdale, Florida. No FAA records could be located to substantiate this check ride; it is possible that this may be another false entry made by the pilot.

Review of pilot's logbooks revealed the following;

- According to pilot's logbooks, pilot's first recorded flight for Blackhawk International as PIC was on 8/12/2001. Those flights were recorded as having been conducted in a Cessna C402 aircraft registration numbers N2399W and N2389W. Inquiries of the FAA database revealed aircraft N2399W as a Beech A23-24 and N2389W a Beech 23-19. **Refer to Appendix 11, FAA database Information**.

- A part 135 check ride in a Piper Seneca for Golden Airlines was recorded on 8/13/2001. (No FAA signature was noted on the check ride form).

- Gear failure in Piper Seneca during a flight to Marsh Harbour was recorded on 8/15/2001.

- A total of nine flights to Marsh Harbour were recorded prior to the mishap flight (most of those flights were in a Piper Seneca).

A cross-check of the listed Cessna 402 aircraft in the pilot logbook against the FAA database, revealed the following discrepancies;

- N649D, listed as a C402 was found to be a 1940 Boeing PT17
- N6418F, listed as a C402 was found to be a deregistered Cessna C150
- N8418F, listed as a C402 was found to be a C-401
- N268JA, listed as a C402 was not listed
- N518SP, listed as a C402 was found to be a Cessna 172S
- N2399W, listed as a C402 was found to be a Beech A23-24
- N2389W, listed as a C402 was found to be a Beech A23-19

For a list of database records refer to **APPENDIX 4**.

The pilot was employed on August 23, 2001 by Blackhawk International Airlines, just two (2) days prior to the accident.

1.6 AIRCRAFT INFORMATION AND HISTORY

The mishap aircraft Registration N8097W, Cessna C402B aircraft, Serial Number 402B1014 was manufactured as a utility liner aircraft in the United States in 1976. The aircraft was registered to Skystream Inc. on October 12, 1990 (see **APPENDIX 4**). At the time of the accident, the aircraft was operated under a FAA Part 135 Single Pilot Operation Certificate as Blackhawk International Airways. According to FAA records, Mr Gilbert Chacon (the owner) was the only pilot approved to fly charters in this aircraft, under this certificate.

The aircraft logbooks were never made available to the authorities. As a result, the maintenance status of the aircraft could not be determined i.e. (the history of the aircraft, total hours flown since manufacture, total hours since overhaul, total hours since last scheduled inspection and aircraft maintenance program used).

Engines – the fatal aircraft was outfitted with two turbo charged engines, model number TCM TSIO-520E manufactured by Teledyne Continental Motors.

The serial number of the engine installed on the left wing of the aircraft was 275461-R. The serial number of the engine installed on the right wing of the aircraft was 275265-R. The total hours since overhaul on either engine are unknown. The total hours since last inspection on either engine are unknown. From manufacturer's documents, this model engine has an overhaul period of 2000 Hours. The overall condition, visual and teardown inspections of both engines and parts conducted by Teledyne Motors, did not reveal any internal engine anomalies or discrepancies which would have precluded normal operation prior to impact. (**APPENDIX 8**)

Propellers – Installed in the left position of the fatal aircraft was a three blade propeller model number 3AF32C504-C, Serial Number 962062 manufactured by McCauley Propellers. At the time of this inspection, this model propeller had an overhaul period of 1600 hours. The propeller installed in the right position was model number 3AF32C87-N2R and Serial Number 748513. At the time of the inspection this propeller had an overhaul period of 1500 hours. The total hours since overhaul and total hours since last inspection on both propellers are unknown as maintenance documents were never provided by the operator. The propellers were examined by representatives of McCauley Propellers. The findings indicated that both propellers were near low pitch, high RPM position (non-feathered), and the damages found were consistent with high power settings.

1.7 METEOROLOGICAL INFORMATION

The weather report at Marsh Harbour International Airport, Marsh Harbour, Abaco, Bahamas around the time of the mishap was; winds at 090º at 3 to 4 knots, the sky was clear and the temperature was 86ºF (30ºC).

The weather at Freeport, Grand Bahama, Bahamas, approximately 88 nautical miles west of the mishap site, at 1900 EDT, 15 minutes after the mishap was; wind 350º at 4 knots, few clouds at 3,000 feet, temperature 88ºF (31ºC), dew point 73ºF, and the altimeter setting was 29.92 in Mercury (hg).

The weather for Nassau, Bahamas, 90 nautical miles south of the mishap site at 1900 EDT, 15 minutes after the mishap was wind 350º at 6 knots, few clouds at 2,000 feet, temperature 86ºF (30ºC), dew point 70ºF (21ºC), and pressure of 1016 millibar (mb).

1.8 AIDS TO NAVIGATION

Navigational Aids not a factor in this mishap.

1.9 COMMUNICATIONS

Communications not a factor in this mishap.

1.10 AIRCRAFT LOADING

From calculations conducted after the mishap, the aircraft exceeded operating limitations published in the Cessna C402 Pilots Operating Handbook. *The aircraft's weight was estimated to be 941 lbs over the maximum allowable takeoff weight. The weight of the un-recovered bag was not added to the weight and balance calculations. The center of gravity was estimated to*

be 4.4 inches aft of the maximum aft allowable center of gravity envelope) See **APPENDIX 14 Load and Performance** for complete loading and performance calculations.

1.10.1 AIRCRAFT PERFORMANCE

The takeoff distances for the mishap aircraft were calculated based on the following conditions:
2700 RPM and 34.5 inches Hg manifold pressure (Pilot's Operating Handbook)
Temperature 86ºF (30ºC)
Flaps up (POH)
Cowl Flaps Open (POH)
Level, hard surface, dry runway (POH)
Distance increased 5% for each 2 knots of tailwind (POH) and wind 4 knots.
Distances represent the aircraft's gross weight at 6300 lbs., and the center of gravity within the balance envelope.
Note: Distance applies from point where full power is applied.

GW	Ground Roll	Distance to clear 50' obstacle	Accelerate stop Distance
6300 lbs.	2167' (POH)	3237' (POH)	3707'(POH)

1.11 COCKPIT VOICE RECORDER

Regulations did not require this aircraft to be equipped with a cockpit voice recorder.

1.12 WRECKAGE AND IMPACT INFORMATION

For detailed wreckage and impact information refer to Onsite Investigation **APPENDIX 12**.

1.13 MEDICAL AND PATHOLOGICAL

The pilot and eight passengers were fatally injured from trauma and / or burns as a result of the impact forces and the post impact fire. Eye witnesses reported that the pilot (Luis Morales), the hairdresser (Dodd) and the body guard (Gallin) were alive when help arrived at the mishap site. They all later, succumbed to their injuries.

Forensic report conducted on the pilot revealed that *benzoylecgonine **(APPENDIX 17)*** a cocaine metabolite, was found in his urine and ethanol (alcohol) was found in his stomach contents. For official Forensic Report results see **APPENDIX 2.**

1.14 FIRE

There was a post impact fire, for further information see On site Investigation **APPENDIX 12**,

1.15 SURVIVAL ASPECTS

Due to the impact forces and post-impact fire, this accident was not survivable, see **APPENDIX 10.**

1.16 TESTS AND RESEARCH

Test and disassembly inspection was conducted on the engines as well as the propellers. The engine disassembly inspection was conducted by Teledyne Continental Motors see **APPENDIX 8**.

The Propeller teardown inspection was conducted by McCauley Propellers.

2.0 ANALYSIS:

2.1 Root causes of the accident

- Aircraft exceeded the maximum allowable weight of 6300 pounds by approximately 941 pounds (1 piece of baggage was never recovered and therefore its weight not added to the calculations).
- Aircraft weight improperly distributed. Witness reported that two (2) of the largest passengers weighing approximately 300 pounds each were seated in the aft cabin.
- As a result of the improper weight distribution, aircraft center of gravity was calculated to be located approximately 4.4 inches aft of max allowable aft center of gravity limitations of 159.8 inches (1 piece of baggage was never recovered).
- Pilot qualification on Cessna 402 aircraft questionable. Pilot falsified many of the aircraft hours received on this type of aircraft. See **Pilot Information Section 1.5 and Appendix 18.**
- Possibility exists that no weight and balance or performance calculations were made prior to flight as none of these completed documents were found.

Possibility exists that checklist may not have been followed.

- The Pilot Operating Handbook "before takeoff checklist" states;
  Fuel Selectors: "Left Engine – Left Main Tank", "Right Engine – Right Main Tank". Field investigation immediately following the accident revealed both fuel tank selectors were found selected to the right main tank. The left fuel valve was in the left position. ***Impact damage may have changed the pre-impact settings, thereby rendering the observed positions as unreliable***.

- ***Aircraft Flight Controls*** *(*secondary control surfaces – trim tabs) ***were found to be out of normal range required for takeoff***. The aileron trim tab was found selected all the way to the right. The rudder trim tab was found selected to the left and the elevator trim tab was found in the full nose down position. ***Impact damage may have changed the pre-impact settings, thereby rendering the observed positions as unreliable***. **(See APPENDIX 6).**

- According to Pilot's Operating Handbook (POH) normal takeoff is 0˚ flaps. ***(The flap selector handle was selected to 15˚with the indicator at approximately the 15˚ position. The wing flap push rods were bent, indicating partial extension at impact.)***

2.2 Immediate causes of the accident

Aircraft Overweight: The aircraft's weight was estimated to be 941 lbs over the maximum allowable takeoff weight. The weight of the un-recovered bag was not added to the weight and balance calculations. The center of gravity was estimated to be 4.4 inches aft of the maximum aft allowable center of gravity envelope)

Improper Weight Distribution: Due to the placement of passengers and baggage on the aircraft, the center of gravity was approximately 4.4 inches aft of the maximum aft allowable center of gravity limitations of 159.8 inches (1 piece of baggage was never recovered).

Aircraft Performance: It is unknown whether the pilot completed weight and balance and performance calculations prior to the flight. No evidence of any weight and balance or performance calculations was found.

Aircraft Flight Control Trim Tab Indicators were positioned as follows:

- Aileron - selected all the way to the right.
- Rudder selected to the left.
- Elevator selected in the full nose down position.

The overloading of the aircraft, combined with its center of gravity being outside the maximum allowable limits, the trim surfaces being found at full deflection, and the temperature of the day, was a major contributing factor to the accident.

2.3 Underlying causes of the accident

Aircraft

- Current maintenance status at time of accident unknown.
- Witnesses reported hearing aircraft engines backfiring and running rough.
- Witnesses also reported pilot had a hard time starting the engines prior to departure.

Environmental Factors and Effects

- Aircraft performance may have been greatly reduced on takeoff due to the temperature of the day, the excess weight placed on the aircraft, the improper weight distribution, the trim control surfaces being out of normal range for takeoff and the center of gravity being aft of the max allowable aft limitations.

Organisational

- It was reported that the luggage was not weighed but placed on the aircraft. A weight and balance document could not be produced to determine whether weight limitation and distribution were within legal limits.

- It was unable to be determined whether company had a policy that required the pilot to complete weight and balance and performance calculations.

- Company adherence to maintenance practises required by FAA regulations and Manufacturers guidelines unknown and questionable as the following;
  - Maintenance logbooks were not provided by the owner for review.
  - A witness observed the aircraft parked on the ramp with the aft cabin door opened and supported by a crate. Cabin door cable supports were unserviceable.
  - Left engine fuel control screen was blocked 10% with lint.
  - Left and right engine spark plugs had elliptical wear patterns and were overdue for replacement according to the engine manufacturer.
  - Cessna mandatory Service Bulletin MEB88-3, Auxiliary Fuel Pump Wiring Modification, dated 8/12/88, had not been accomplished.
  - Left and right fuel filter assemblies were contaminated with metal deposits and rust.

There were no FAA reports of any enforcement actions or service difficulty reports against the fatal aircraft. However, the FAA did report four administrative actions against Blackhawk,

three for technical violations and the most recent for maintenance failures. The agency issued a correction letter April 28, 2000, citing Blackhawk's failure to comply with manufacturer recommended maintenance programs and FAA programs for its aircraft's engines or other parts, Blackhawk failed to have a person in charge of maintenance with an appropriate certificate and used unsanctioned techniques and equipment for repairs.

People & Human Factors

- Passengers were in a hurry to depart. Passengers' urgency to depart may have led to the pilot not completing required documents.
- Pilot did not exercise command and allowed passengers to influence him into taking all of the luggage and persons onboard the aircraft.
- Pilot may not have followed manufacturers check list.
- Pilot falsified experience in his logbook on this type of aircraft.
- Pilot falsified qualification on this type of aircraft.
- Pilot may not have followed normal operating procedures as per Cessna 402B Pilot Operating Handbook Checklist.
- Pilot failed to follow manufacturer's guidelines as well as regulations regarding maximum takeoff weight and performance limitations.
- Benzoylecgonine (metabolite of cocaine) was detected in urine of pilot. Ethanol was detected in stomach contents.

3.0 CONCLUSION

Findings and Probable Cause

- **Aircraft overweight**. *Pilot did not determine if the aircraft was within operating limitations. The aircraft's weight was estimated to be 941 lbs over the maximum allowable takeoff weight. The weight of the un-recovered bag was not added to the weight and balance calculations. The center of gravity was estimated to be 4.4 inches aft of the maximum aft allowable center of gravity envelope)*

- **Pilot Unqualified.** *Pilot was not qualified under Part 135 for the aircraft in which he was flying.*

- **Documents Falsification.**

  - *Pilot falsified logbook to reflect more flight time than he actually had accumulated. Review of pilot logbook revealed in several instances, pilot added as much as 1,000 hours to his total flight and multi engine times. Hundreds of day and night landings were falsified to meet qualification requirements.*

  - *Pilot falsified aircraft information (types and registration numbers) reporting them to be Cessna C402 aircraft, when FAA database clearly lists the aircraft in question as aircraft other than Cessna C402 (see **APPENDIX 11**)*

- Pilot may not have completed a weight and balance report. *(No evidence existed that showed he had completed a load manifest or weight and balance and performance calculations).*

- Pilot failed to comply with prescribed Weight and Balance and Performance limitations in Pilot's Operating Handbook. *(The aircraft's weight was estimated to be 941 lbs over the maximum allowable takeoff weight. The weight of the un-recovered bag was not added to the weight and balance calculations. The center of gravity was estimated to be 4.4 inches aft of the maximum aft allowable center of gravity envelope)*)

- Pilot may not have followed "before takeoff" checklist in Pilot's Operating Handbook.

  - ***Fuel Selectors: "Left Engine – Left Main Tank, Right Engine – Right Main Tank"***. Field investigation immediately following the accident revealed both fuel tank selectors were found selected to the right main tank. The left fuel valve was found in the left position, though the cable was separated from the valve. ***Impact damage may have changed the pre-impact settings, thereby rendering the observed positions as unreliable.***

  - ***Aircraft Flight Controls*** (secondary control surfaces – trim tabs) ***were found to be out of normal range required for takeoff***. The aileron trim tab was found selected all the way to the right. The rudder trim tab was found selected to the left and the elevator trim tab was found in the full nose down position. ***Impact damage may have changed the pre-impact settings, thereby rendering the observed positions as unreliable***. **(See APPENDIX 6).**

- According to Pilot's Operating Handbook (POH) normal takeoff is 0˚ flaps. ***(The flap selector handle was selected to 15˚with the indicator at approximately the 15˚ position. The wing flap push rods were bent, indicating partial extension at impact.)***

- Blackhawk International Airways was not authorized to assign this pilot as a pilot in command because they did not have the authority to use a second pilot. Blackhawk International Airways was authorized as a single pilot operation with Mr. Gilbert Chacon as the only authorized pilot.

- Blackhawk International Airways reportedly hired Mr Morales two days prior to the fatal accident, although they did not have the authority to use a second pilot. Further, they did not exercise due diligence in ensuring pilot's qualification prior to assigning duty as pilot in command.

- There were no FAA reports of any enforcement actions or service difficulty reports against the fatal aircraft. However, the FAA did report four administrative actions against Blackhawk, three for technical violations and the most recent for maintenance failures. The agency issued a correction letter April 28, 2000, citing Blackhawk's failure to comply with manufacturer recommended maintenance programs and FAA programs for its aircraft's engines or other parts, Blackhawk failed to have a person in charge of maintenance with an appropriate certificate and used unsanctioned techniques and equipment for repairs.

- **Results of disassembly report confirms that no discrepancies existed that would have precluded normal operation of both left and right engines prior to impact.**

- Forensic Report **(Appendix 2)** showed traces of benzoylegonine (a metabolite of cocaine) **(Appendix 17)** in the urine and traces of ethanol in the stomach contents of the pilot.

- # On July 7, 2001, Morales was arrested by the Broward Sheriff's Office in an area of Pompano Beach known for drug sales. A deputy who pulled over Morales' 1993 Volkswagen Fox for running a stop sign said he found pieces of crack cocaine and other paraphernalia in the car. According to the deputy, Morales said he was in the area to buy powder cocaine for a friend.

- # In November 2000, Morales was arrested by Fort Lauderdale police after he tried to "return" $345 worth of stolen aviation parts to a local distributor. Instead of giving Morales cash, store employees called police, who were investigating a string of airplane burglaries. Mr. Morales was charged with dealing in stolen property after detectives found that a receipt in his bag belonged to the burglary victim who actually bought the parts. An additional charge of grand theft was tacked on when detectives recovered other stolen items.

 # - information retrieved from AvStop Magazine Online.

4.0 SAFETY RECOMMENDATIONS

Recommendation 1

Effective immediately Flight Standards Inspectorate should recommend that all 135 operators operating to the Bahamas show proof of oversight by US authorities. In accordance with the International Civil Aviation Organization (ICAO) Standards and Recommended Procedures (SARP's) all countries are required to provide oversight of its operators. ***(However, the fact that an operator has a Part 135 certificate does not automatically ensure that oversight is being provided by the FAA).***

Recommendation 2

The authorities should make recommendation to the FAA to ascertain that all Part 135 operators operating outside of their certificated regions have their certificate reflect new region of operation.

Recommendation 3

Recommendations should be made that all Part 135 operators applying for permit to operate into the Bahamas, with existing FAA maintenance citations, indicate that fact to the Bahamas CAA at time of application. In addition, all existing approved 135 operators at the time of renewal should indicate the same.

Recommendation 4

Recommend that the Bahamian Government establish a positive means to identify all current operators operating to and from the Bahamas.

Recommendation 5

Recommend that Civil Aviation Department complete a thorough background check thru the DOT / FAA on applicant, prior to the approval of all applications for permission to operate into the Bahamas. In addition to background checks, request that the FAA reciprocate with a letter of oversight.

Recommendation 6

Recommendations that the Bahamas Civil Aviation Department embark on an aggressive program to ensure that all companies that operate between the Bahamas and the United States, (135 operators, passengers / cargo) are operating in their approved regions and have oversight from the FAA.

Recommendation 7

Recommendation that the Flight Standards Inspectorate broaden scope of ramp checks and audits, to include, on a more regular basis, all foreign operations to ensure that they are in compliance with their state rules.

5.0 EVIDENCE

Evidence

The following is a list of the evidence recorded. Excerpts or summaries from the evidence gathered are incorporated in this report. Where evidence are listed below and not included in this report, it may be a matter of the file being too large to be included.

The full text of such evidence is available at the office of the Flight Standards Inspectorate, Nassau International Airport, Upstairs Old Airport Terminal 2.

For further information, contact Manager –Flight Standards Inspectorate, Captain Patrick Rolle.

Disassembly Report Engine –	Teledyne Continental Motors
Disassembly Report Propeller –	McCauley Propellers
Accident Field Notes –	Mr. Walter Evans
Accident Field Notes –	Mr. Charles Fedderwitze
Onsite Investigation Report -	Mr. Tom Moody – Cessna Aircraft Company
Coroners Inquiry Transcripts –	Witnesses Statements
Forensic Report -	Forensic Science Lab - Nassau and Miami Dade M. E. Dept.