National Transportation Safety Board
Aviation Accident Final Report

Location:	LAS VEGAS, NV	**Accident Number:**	LAX93FA287
Date & Time:	07/12/1993, 1440 PDT	**Registration:**	N818AN
Aircraft:	CESSNA 402C	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Scheduled		

Analysis

THE PILOT HAD A 25 MIN TURNAROUND FOR THE ACCIDENT TRIP FROM THE PRIOR FLIGHT. NO WITNESSES WERE FOUND WHO OBSERVED THE PILOT PREPARING FOR THE FLIGHT OR PERFORMING A PREFLIGHT INSPECTION. COMPANY PROCEDURES SPECIFY THAT THE PILOTS ARE RESPONSIBLE FOR LOADING AND UNLOADING THE BAGGAGE. THE MANIFEST FOR THE PRIOR FLIGHT SHOWED 54 LBS OF BAGGAGE IN THE NOSE COMPARTMENT. SHORTLY AFTER LIFTOFF, THE PILOT TOLD THE LOCAL CONTROLLER THAT THE BAGGAGE DOOR WAS OPEN AND HE REQUESTED A 'GO AROUND.' THE LOCAL CONTROLLER TOLD THE PILOT TO MAKE RIGHT TRAFFIC. MULTIPLE WITNESSES SAW THE AIRPLANE IN A NOSE HIGH ATTITUDE DURING THE INITIAL CLIMB AFTER TAKEOFF. THEY REPORTED THE PILOT ENTERED A RIGHT TURN WHICH CONTINUED UNTIL THE AIRPLANE 'FELL TO THE GROUND AND HIT NOSE FIRST.' AN AIRLINE PILOT WITNESS SAID THAT THE AIRPLANE'S ACTIONS WERE A 'CLASSIC VMC ROLL.' OTHER WITNESSES REPORTED THAT THE LEFT NOSE BAGGAGE COMPARTMENT DOOR WAS OPEN DURING THE TAKEOFF AND INITIAL CLIMB. EVIDENCE SHOWS THAT THE RIGHT ENG WAS DEVELOPING LITTLE OR NO POWER.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT'S FAILURE TO MAINTAIN ADEQUATE AIRSPEED WHILE MANEUVERING IN THE TRAFFIC PATTERN. A FACTOR WHICH CONTRIBUTED TO THE ACCIDENT WAS THE PILOT'S FAILURE TO ASSURE THAT THE NOSE BAGGAGE COMPARTMENT DOOR WAS SECURED.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) DOOR,CARGO/BAGGAGE - NOT SECURED
2. (F) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
3. DOOR,CARGO/BAGGAGE - OPEN
4. (C) AIRSPEED(VMC) - NOT MAINTAINED - PILOT IN COMMAND
5. STALL/SPIN - INADVERTENT - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT:

On July 12, 1993, at 1441 hours Pacific daylight time, a Cessna 402C, N818AN, collided with the terrain during an uncontrolled descent at McCarran International Airport, Las Vegas, Nevada. The airplane was destroyed during the impact sequence and the post impact fire. The certificated airline transport pilot and his two passengers received fatal injuries. The airplane was being operated as a scheduled commuter flight by Air Nevada Airlines, Incorporated, under the provisions of CFR 14 Part 135 of the Federal Aviation Regulations at the time of the accident. The airplane was departing Las Vegas and was destined for Grand Canyon, Arizona, when the accident occurred. Visual meteorological conditions prevailed and a visual flight rules flight plan was filed.

According to Air Nevada Airlines documents and witness interviews, the pilot had two days off prior to the day of the accident. Witnesses said he reported to work about 1000 hours the morning of the accident.

Air Nevada Airlines company schedules show the pilot flew a flight to the Grand Canyon airport at 1135 hours. The same documents show the pilot departed Grand Canyon Airport to return to Las Vegas at 1300 hours. His arrival time at Las Vegas according to the documents was 1405 hours. The airplane flown by the pilot on the flights to and from the Grand Canyon Airport was N818AN, the accident airplane. According to the manifest, the pilot had nine passengers on the flight to and from Grand Canyon and 54 pounds in the nose baggage compartment. No one could be found who witnessed the pilot's actions when he returned from Grand Canyon Airport. According to the company's operating manual, the pilot is responsible for removing all baggage from the airplane's baggage compartments.

The next flight the pilot was scheduled to fly was Air Nevada Airlines Flight number 83 from Las Vegas to Grand Canyon. According to company officials, the intended route of flight included sight seeing over the western end of the Grand Canyon while flying a route named "Blue 1" on the special visual flight rules aeronautical chart. The "Official Airline Guide" states Air Nevada Flight number 83 has a scheduled departure time from Las Vegas of 1430 hours. The pilot landed at Las Vegas at 1405 hours from the previous flight, which gave him a 25 minute turn around.

No witness were found who observed the pilot preparing for Air Nevada flight number 83. According to recorded tape transcripts between the pilot and the FAA local controller at in the tower at McCarran International Airport, the pilot, with two passengers aboard the airplane, was cleared for takeoff at 1439:53 hours. At 1440:32, the pilot told the local controller the airplane's baggage door was open. During this conversation, the pilot requested a "go around." At 1440:38 hours, the local controller told the pilot to "make right traffic."

According to multiple witnesses, the airplane was in a "nose high" attitude during the initial climb after takeoff. They reported the pilot entered a right turn which continued until the airplane "fell to the ground and hit nose first." The witnesses reported the airplane exploded upon contact with the ground.

One witness, an airline pilot, reported that he observed the airplane from its takeoff until it crashed. He said he noticed the airplane in a "nose high climb attitude." He described the airplane's actions as a "classic vmc (minimum controllable airspeed with the critical engine

inoperative) roll."

Other witnesses reported that the left nose baggage compartment door was open during the takeoff and initial climb.

According to taped transcripts, the FAA local controller activated the crash phone to the airport fire department at 1440:59. The fire department responded to the accident and extinguished the fire.

The accident occurred at McCarran International Airport at the approximate coordinates of 36 degrees and 5 minutes north latitude and 115 degrees and 10 minutes west longitude.

CREW INFORMATION:

The pilot's company flight records and his FAA airman certification file were reviewed after the accident. According to those records the pilot was qualified and current for the assigned flight in accordance with applicable Federal Aviation Regulations.

AIRCRAFT INFORMATION:

Review of the maintenance and modification records revealed that the airplane had the left nose baggage compartment door modified to include an additional securing lock. The door had a total of four locks to secure it to the airplane. According to company officials, the additional securing lock was put on the airplane by its previous owners, a commuter airline located in the northeastern United States.

Cessna Aircraft Service Bulletin number MEB87-3, dated May 22, 1987, details the installation of an additional securing lock. The lock placed on the airplane's forward nose baggage compartment did not have the securing lock detailed in this Service Bulletin.

METEOROLOGICAL INFORMATION:

A weather observation facility is located at McCarran International Airport. A weather observation was taken at 1446 hours. In part, that observation was: "visual meteorological conditions; clear sky; 35 statute miles visibility; temperature 100 degrees fahrenheit; dew point 36 degrees fahrenheit; wind from 190 degrees magnetic at 9 nautical miles per hour; and an altimeter setting of 29.97 inches of mercury."

WRECKAGE AND IMPACT INFORMATION:

The accident site is located on airport property at McCarran International Airport. The ground at the accident site is level and consists primarily of gravel with no vegetation.

Two circular impressions were located to the south of the main wreckage. The impressions measured about 18 inches in diameter and were about 6 to 9 inches deep. The center of the impressions were measured at about fifteen feet and one inch from center to center. A comparison measurement was taken between the propeller spinners of an exemplar aircraft and found to be about the same as the distance between the two impressions. Portions of the airplane's radome were found to the southeast of the impressions by about 10 feet.

The left propeller assembly was also found at the location. The right propeller assembly was found adjacent to the southern most impression.

The main wreckage was located on a magnetic bearing of about 285 degrees at a distance of about 30 feet from the two impressions. The fuselage was upright and was oriented on a

magnetic bearing of about 165 degrees. The main wreckage was located about 75 feet north of Taxiway D2 and about 75 feet west of Taxiway D. The main wreckage consisted of the airplane's fuselage, both wings, and the empennage. Both engines were separated from the airframe and were found lying behind their respective wings.

The airplane's airstair door was located adjacent to the trailing edge of the right rear elevator. The left nose baggage door was located about 30 feet to the left rear of the fuselage on a magnetic bearing of about 015 degrees.

MAIN WRECKAGE: The nose area of the airplane was crushed aft to the location of the cockpit instrument panel. The right wing was intact and had aft crushing on an angle of 75 degrees when measured with the chord of the wing. Fuel was found in the right wing. The left wing was damaged by fire. The left wing leading edge was separated from the wing and was lying on the ground forward of the wing. All rivets on this wing were sheared. The empennage was intact. The interior of the airplane had fire damage.

Control continuity was established from below the cockpit floor to the elevator, elevator trim, rudder, and rudder trim. Aileron and aileron trim continuity could not be established due to impact damage.

The left and right nose baggage doors were modified with a tab and DZUS fasteners. All four locking mechanisms were intact on the left baggage door with no signs of tearing. The right baggage door DZUS was bent and twisted.

PROPELLERS: Both propeller assemblies were separated from their respective engines. The right propeller did not have "s" twists, leading edge damage, chordwise scratches, or bent tips. The left propeller blades had "s" twists, chordwise scratches, leading edge dents, and aft bends on the blades.

ENGINES: Both engines were broken off their respective mounts and were separated from the remainder of the airframe. During the external examination of the engines, no pre-existing damage was noted. Both engines were shipped to a factory facility for further examination. Both turbochargers were also shipped to a factory facility for further examination.

MEDICAL AND PATHOLOGICAL INFORMATION:

An autopsy was performed on the pilot by Dr. G. Sheldon Green, M. D., Chief Medical Examiner, Clark County (Nevada) Coroner Medical Examiner, on July 13, 1993. The cause of death as listed on the report of autopsy is "Multiple traumatic injuries." No pre existing medical conditions which would have affected the decedent's ability to pilot an airplane were noted on the autopsy report.

A toxicological examination was performed by the FAA Civil Aeromedical Institute on specimens from the remains of the pilot.

Negative results were reported for a screened drugs and volatiles.

Autopsies were performed on the two passengers by Dr. Robert Jordan, M. D., Deputy Medical Examiner, Clark County Corner Medical Examiner, on July 13, 1993. The cause of death as listed on the reports of autopsy for both passengers is "Multiple traumatic injuries."

TESTS AND RESEARCH:

Turbo Chargers: Both turbo chargers were functionally tested and disassembled for examination under the supervision of a Safety Board Investigator. The report of turbo charger examination is attached to this report as Item 4.

Left Engine Turbo Charger System: The left engine turbo charger was observed to have a data plate which identified it as a Garret Factory Overhauled turbo charger. No pre existing discrepancies were noted during the examination of the left engine turbo charger system. Compressor housing to wheel rub was observed on both the turbo charger housing wall and the compressor wheel. The impeller blades were fractured and deformed in a direction opposite that of normal wheel rotation. Rub marks and rotational scoring was observed on the turbine wheel circumference and the impeller blade tips. The internal turbine wheel housing exhibited impeller to housing rub.

Right Engine Turbo Charger System: The right engine turbo charger was observed to have a data plate which identified it as "Remanufactured" by Main, Incorporated, Visalia, California.

The compressor wheel was noted to have no evidence of rub around the wheel circumference. The impeller blades were crushed from front to rear. An indented impression of the impeller blades was found on the inside of the compressor housing, with no evidence of impeller blade to housing wall rub or scoring evident. No rub evidence was observed on the compressor section back plate or the corresponding rear face of the compressor wheel.

The shaft which connects the compressor and turbine wheels was found fractured at a point about three quarters of an inch aft of the compressor wheel. The fracture face was observed to be on a 45 degree plane to the longitudinal axis of the shaft. No rotational smearing of the fracture face was observed. Optical examination of the fracture face revealed no unusual characteristics. The oil seal ring on the turbine end of the shaft was found out of its normal location on the shaft. The channel in which the oil seal ring normally rides was found completely filled by heavy deposits of carbon. Heavy deposits of carbon and burned oil residue were found immediately forward of the oil seal ring on the turbine shroud.

No rub marks or scoring was observed on the turbine wheel circumference or impeller blade tips. The internal turbine wheel housing exhibited turbine impeller marks, with no impeller to housing rub evident. A pattern of exhaust gas or ground fire gas by product discoloration was noted on the housing wall in a patter in conformance with the orientation of the impeller blade marks.

The center section compressor and turbine bearings were removed and examined. No unusual operating signature or condition was noted.

The turbo controller had a data plate which identified it as being overhauled by Main, Incorporated. Because of impact damage the unit could not be functionally tested. The poppet valve was removed from the unit. Evidence of machining was found on the first large shoulder of the stem. According to the Garrett technical representative, this component is not reworkable during overhaul. Burrs were noted on the inside of the seat poppet housing, with evidence of machine rework observed. The relief valve was pressure tested on a calibrated test bench. The valve cycled at a value of 44.40 PSI. According to the unit overhaul specification, the valve should cycle at a pressure value of 41.8 PSI. Disassembly of the unit revealed a crack in the bellows assembly, with corrosion deposits noted above and below the crack area.

The waste gate valve was functionally tested on a calibrated test bench. The unit functioned normally and was not disassembled.

Engines: Both engines were disassembled and examined at Continental Motors in Mobile, Alabama. No pre existing deficiencies were noted during the examination of the engines.

ADDITIONAL INFORMATION:

The aircraft was released to Mr. Marv Rogge, representing the owner, on October 14, 1993.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	**Age:**	32, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Balloon	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	04/01/1993
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	4120 hours (Total, all aircraft), 568 hours (Total, this make and model), 3968 hours (Pilot In Command, all aircraft), 198 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N818AN
Model/Series:	402C 402C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	402C-0324
Landing Gear Type:	Retractable - Tricycle	**Seats:**	10
Date/Type of Last Inspection:	06/24/1993, AAIP	**Certified Max Gross Wt.:**	6850 lbs
Time Since Last Inspection:	52 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:	11513 Hours	**Engine Manufacturer:**	CONTINENTAL
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-520-UB
Registered Owner:	ABBEY MERE, INC.	**Rated Power:**	325 hp
Operator:	AIR NEVADA AIRLINES	**Operating Certificate(s) Held:**	Commuter Air Carrier (135)
Operator Does Business As:		**Operator Designator Code:**	RNVA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	LAS, 2145 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	1445 PDT	**Direction from Accident Site:**	1°
Lowest Cloud Condition:	Clear / 0 ft agl	**Visibility**	35 Miles
Lowest Ceiling:	None / 0 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	38°C / 2°C
Precipitation and Obscuration:			
Departure Point:	(LAS)	**Type of Flight Plan Filed:**	VFR
Destination:	GRAND CANYON, AZ (GCN)	**Type of Clearance:**	VFR
Departure Time:	1439 PDT	**Type of Airspace:**	Class D

Airport Information

Airport:	MCCARREN INTERNATIONAL (LAS)	**Runway Surface Type:**	Concrete
Airport Elevation:	2175 ft	**Runway Surface Condition:**	Dry
Runway Used:	19L	**IFR Approach:**	None
Runway Length/Width:	9776 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-Ground
Total Injuries:	3 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	RICHARD V CHILDRESS	**Report Date:**	06/22/1994
Additional Participating Persons:	MARTIN SPEISER; WASHINGTON, DC MARK FISHER; LAS VEGAS, NV R S BOYLE; MOBILE, AL CLAUDE UNDERWOOD; WICHITA, KS		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		