Aviation Investigation Final Report

Location:	Fort Lauderdale, Florida	**Accident Number:**	MIA04LA062
Date & Time:	March 13, 2004, 04:50 Local	**Registration:**	N11FL
Aircraft:	Beech BE90	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	7 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The pilot stated, during the approach to the airport he selected the landing gear to the down position. He observed two green lights and the light for the left landing gear was off on the landing gear indication. He informed the tower of the situation and cycled the gear with no change to the indication. He advised the tower he would like to perform a fly-by to have a visual check of the landing gear. The tower approved the low approach. The pilot cycled the landing gear one more time and got three green lights on the landing gear indication. The tower informed the pilot the gear appeared to be down and in place. The pilot requested and received clearance to land on runway 13. The accident airplane landed and rolled approximately 2,000 feet on the runway before the left main landing gear collapsed. The FAA inspector who responded to the accident site stated, the left main gear assembly was found retracted and up into the engine nacelle. The lock down assembly was unlocked and undamaged. The left main landing gear torque link was broken and the left landing gear actuator gearbox assembly was detached from its mount box. The investigating FAA inspector stated, at the time of the accident the accident airplane had accumulated about 148 hours since its last maintenance inspections, on January 3, 2004. That inspection included checking the actuator support brackets for visible damage, wear, cracks, loose or missing rivets. An examination of the fractured left gear actuator support box structure brackets revealed a crack that circumscribes the lower hi-shear rivet holes of the outboard bracket. The operator of the accident airplane stated, during damage assessment, a structural failure of the left main landing gear actuator support box structure was discovered. They suspected the structure had at least one existing crack which allowed the actuator to "float" within the support structure not allowing complete spring compression from the actuator to engage the left main landing gear drag leg hooks.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadequate inspection of the landing gear system by company maintenance personnel resulting in a crack in the left main landing actuator mount going undetected and collapse of the left landing gear during landing roll when the actuator attachment failed.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: APPROACH

Findings
1. LANDING GEAR,MAIN GEAR ATTACHMENT - CRACKED
2. (C) MAINTENANCE,INSPECTION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
3. LANDING GEAR,MAIN GEAR ATTACHMENT - FAILURE

Occurrence #2: GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Factual Information

On March 13, 2004, about 0450 eastern daylight time, a Beech BE90, N11FL, registered to Core Investments Inc. and operated by Execstar Aviation, as a Title 14 CFR Part 135 on demand air taxi flight, experienced a collapse of the left main landing gear during the landing roll at Fort Lauderdale International Airport, Fort Lauderdale, Florida. Visual meteorological conditions prevailed and an instrument flight rule flight plan was filed. The commercial-rated pilot and the six passengers were not injured, and the airplane incurred substantial damage. The flight originated from Cancun International Airport, Cancun, Mexico, earlier that day, about 0100.

The pilot stated, during the approach to the airport he selected the landing gear handle to the down position. He observed two green lights and the light for the left landing gear was off on the landing gear indication. He reduced engine power and heard the landing gear warning horn and elected to abort the landing. He informed the tower of the situation and recycled the landing gear. The landing gear indication did not change. He advised the tower he would like to perform a fly-by to have a visual check of the gear. The tower advised the pilot to perform a low approach south of the tower to observe the landing gear position. The pilot cycled the landing gear one more time and got three green lights on the landing gear indication. The tower informed the pilot the gear appeared to be down and in place, and asked the pilot to state his intentions. The pilot than requested a landing clearance. At which time, the tower cleared the pilot to land on runway 13 and called Airport Rescue Fire Fighting to standby. The accident airplane landed on runway 13 and rolled approximately 2,000 feet on the runway before the left main landing gear collapsed.

The FAA inspector who responded to the accident site stated, the left main gear assembly was found retracted and up into the engine nacelle. The lock down assembly was unlocked and undamaged. The left main landing gear torque link was broken and the left landing gear actuator gearbox assembly was detached from its mount box. The left main landing gear gearbox drive shaft was disconnected from the universal joint and the connecting bolt was missing.

The investigating FAA inspector stated, at the time of the accident the accident airplane had accumulated about 148 hours since its last maintenance inspection, a Phase 3 of its Airplane Approved Inspection Program, on January 3, 2004. The Phase 3 inspection includes checking the actuator support brackets for visible damage, wear, cracks, and loose or missing rivets. An examination of the fractured left gear actuator support box structure brackets revealed a crack that circumscribes the lower hi-shear rivet holes of the outboard bracket.

The operator of the accident airplane discovered a structural failure of the left main landing gear actuator support box structure during assessment of the damage to the left wheel well area. They report that it is suspected the structure had at least one existing crack which

allowed the actuator to "float" within the support structure not allowing complete spring compression from the actuator to engage the left main landing gear drag leg hooks.

Pilot Information

Certificate:	Commercial	**Age:**	30,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 1, 2003
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 1, 2004
Flight Time:	3900 hours (Total, all aircraft), 1600 hours (Total, this make and model), 3000 hours (Pilot In Command, all aircraft), 44 hours (Last 90 days, all aircraft), 22 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N11FL
Model/Series:	BE90	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	LJ-301
Landing Gear Type:	Retractable - Tricycle	**Seats:**	10
Date/Type of Last Inspection:	January 1, 2004 AAIP	**Certified Max Gross Wt.:**	9300 lbs
Time Since Last Inspection:	164.1 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	14744.3 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-20
Registered Owner:	Core Investments Inc.	**Rated Power:**	550 Horsepower
Operator:	EXECSTAR AVIATION INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	XVQA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dawn
Observation Facility, Elevation:	KFLL,9 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	04:53 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Scattered / 3400 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 4500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	21°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Cancun (MMUN)	**Type of Flight Plan Filed:**	IFR
Destination:	Fort Lauderdale, FL (KFLL)	**Type of Clearance:**	IFR
Departure Time:	06:00 UTC	**Type of Airspace:**	

Airport Information

Airport:	Fort Lauderdale-Hollywood Intl FLL	**Runway Surface Type:**	Asphalt
Airport Elevation:	9 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	13	**IFR Approach:**	None
Runway Length/Width:	6930 ft / 150 ft	**VFR Approach/Landing:**	Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	6 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	7 None	**Latitude, Longitude:**	26.18943,-80.170845(est)

Administrative Information

Investigator In Charge (IIC):	Yurman, Alan
Additional Participating Persons:	Carlton L Kitchen; FAA / Fort Lauderdale FSDO-17; Fort Lauderdale, FL
Original Publish Date:	September 13, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=58924