Section 21: NTSB Gyroplane Accident Reports

21-1. This section includes all gyroplane accident records issued by the US National Transportation Safety Board (NTSB) for the period 1983-1994. Names are omitted from the reports; if desired, the full report can be obtained from the NTSB.

22-2. Definitions

a.The following are excerpted from NTSB Part 830: Notification and Reporting of Aircraft Accidents or Incidents and Overdue Aircraft, and Preservation of Aircraft Wreckage, Mail Cargo and Records, 830.2: Definitions. These definitions are used in NTSB accident reports.

1. Aircraft accident means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

2. Fatal injury means any injury which results in death within 30 days of the accident.

3. Incident means an occurrence other than an accident associated with the operation of the aircraft, which affects or could affect the safety of operations.

4. Serious injury means any injury which: (i) requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; (ii) results in a fracture of any bone (except simple fractures of fingers, toes or nose); (iii) causes severe hemorrhages, nerve, muscle or tendon damage; (iv) involves any internal organ; or (v) involves second-or third-degree burns, or any burns affecting more than five percent of the body surface.

5. Substantial damage means damage or failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels tires, flaps, engine accessories, brakes or wingtips are not considered substantial damage for the purpose of this part.

21-3. Gyroplanes identified with an asterisk * are certificated in the Experimental category and generally do not have Aircraft Flight Manuals. These gyroplanes do not meet the certification requirements, e.g. stability and control, strength, performance, etc. of FAR 27: Airworthiness Standards: Normal Category Rotorcraft, and are usually flown by untrained, unlicensed pilots.

21-4. NTSB ID No. MIA83FKA01
Date: 02/03/83
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

The gyrocopter crashed during takeoff after climbing to about 50 feet agl. This was the seventh takeoff of the day for this flight. The pilot lost control of the aircraft and it dove vertically to the ground. Investigation of the wreckage revealed that the cyclic stick had become disconnected under the pilot's seat. This separation of the stick was not the result of the impact. The pilot did not possess an airman certificate and there was no record to substantiate that he had any training in the gyrocopter. The pilot never applied for an airworthiness certificate.

Findings:

1. Airframe/component/system failure/malfunction: Takeoff-initial climb
   Rotorcraft flight control: cyclic control <> Disconnected
2. Loss of control-in flight: Takeoff-initial climb
3. In flight collision with terrain/water: Descent-uncontrolled

21-5. NTSB ID No. DEN83FTE07
Date: 03/12/83
Aircraft make: Rotorcraft Z6*
Damage: Substantial
Injuries: 1 person, fatal

The homebuilt gyrocopter crashed on level terrain after rudder and rotor blade separation in flight. The rudder was found about 100 yards form the main wreckage. It had been struck by one of the rotor blades and had separated in flight. The separated rotor blade landed with the main wreckage. The pilot had no record of previous flight in this gyrocopter or any other aircraft and did not possess a pilot certificate. The pilot's seat belt was not buckled at impact and he was fatally injured when thrown clear of the aircraft.

Findings:

1. Airframe/component/system failure/malfunction: Maneuvering
   Rotor system, main rotor blade <> Separation Rotorcraft flight controls <> Improper use of <> Pilot in command
Lack of total experience in kind of aircraft <> Pilot in command Flight control, rudder <> Separation
   Performance data <> Not understood <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-6. NTSB ID No. MIA83FA144
Date: 05/22/83
Aircraft make: Parson Bensen*
Damage: Substantial
Injuries: 1 person, fatal

The gyrocopter descended to the lake in an uncontrolled maneuver and crashed. The pilot was on his second flight in the aircraft and had been told to limit his climb to 10-15 feet agl by the builder of the gyrocopter. The pilot climbed to about 400 feet agl and the aircraft started to porpoise. During the third oscillation the gyrocopter overturned and fell into the lake. Witnesses heard the engine operating until impact. The aircraft impacted the water at a high angle of descent while in a left turn. The propeller blades shredded upon impact. Wreckage examination revealed no evidence of failure or malfunction prior to impact.

Findings:

1. Loss of control-in flight: Maneuvering
   Rotorcraft flight controls <> Improper use of <> Pilot in command
   Inadequate training <> Pilot in command
   Maneuver <> Uncontrolled <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Water, glassy

21-7. NTSB ID No. DEN83FTM05
Date: 06/16/83
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, serious

The gyrocopter collided with a powerline at 29 feet agl. The pilot took off from a road and in proceeding along the road collided with the wires. The pilot was seriously injured. His student pilot certificate had expired in December 1979. Due to his injuries no pilot report was submitted.

Findings:

1. In flight collision with object: Takeoff-initial climb
   Object <> Wire, transmission
   Visual lookout <> Inadequate <> Pilot in command
   Judgment <> Poor <> Pilot in command
   Procedures/directives <> Not followed <> Pilot in command
   Proper altitude <> Not maintained <> Pilot in command
2. In flight collision with terrain/water: Takeoff-initial climb

21-8. NTSB ID No. LAX83LUQ03 ¨
Date: 06/18/83
Aircraft make: Mareik-Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

The gyroplane was observed to departed from controlled flight at or below 800 feet agl and the pilot became separated from the aircraft. Both impacted the ground in a near vertical descent about 40 feet apart. The pilot's blood alcohol content was 0.13%. The clasp ends of the seat belt straps were open. Both webbings of the two straps were impregnated with grease and foreign material. The clasp grips were rounded off and the grooves between them contained foreign material. The left strap stitching on the upper edge of the strap was worn and deteriorated along a length of six inches in the area where the metal clasp would normally be clasped together and several hard tugs with one hand were sufficient to cause the seatbelt to come open. This procedure was tested six times with the same results.

Findings:

1. Loss of control-in flight: Maneuvering
   Flight controls <> Improper use of <> Pilot in command
   Physical impairment (alcohol) <> Pilot in command
2. Miscellaneous/other: Maneuvering

Miscellaneous equipment/furnishings, seat belt <> Deteriorated
Miscellaneous equipment/furnishings, seat belt <> Inadequate
Miscellaneous equipment/furnishings, seat belt <> Disconnected
3. In flight collision with terrain/water: Descent-uncontrolled

21-9. NTSB ID No. LAX83FUG18
Date: 07/02/83
Aircraft make: Miller RA1*
Damage: Destroyed
Injuries: 1 person, fatal

Witnesses observed that shortly after takeoff the gyrocopter porpoised. The main rotor blades separated in flight and the aircraft crashed.

Findings:
1. Loss of control-in flight: Cruise-normal
Rotor system, main rotor blade <> Separation
Design stress limits of aircraft <> Exceeded <> Pilot in command
Overconfidence in personal ability <> Pilot in command
Rotor system, main rotor blade <> Undetermined
Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
Terrain condition <> Ground

21-10. NTSB ID No. ATL83LA264
Date: 07/09/83
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

The aircraft crashed during takeoff while on a pleasure flight. A witness stated that he saw the aircraft take off and climb out at a gradual climb to about 100 feet and then start a gradual descent to about 30 feet at which time the aircraft nosed over and went almost vertically into the ground. The carburetor air filter came off and struck the propeller, causing severe vibration. The propeller then struck the pilot and the aircraft plummeted to the ground.

Findings:
1. Airframe/component/system failure/malfunction: Takeoff
Fuel system, ram air/induction air <> Separation
Propeller system/accessories,blade <> Vibration
Fuselage <> Disintegrated
2. In flight collision with terrain/water: Descent-uncontrolled

21-11. NTSB ID No. SEA83LA158
Date: 07/23/83
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, serious

Reportedly, the pilot had received seven hours dual instruction in the Bensen Gurocopter. He had been observed taxiing the aircraft on an unused portion of the airport during the winter months of 1982 and 1983. However, no flights were observed and the student pilot had noe ndorsement. On 7/30/83, the aircraft crashed approoximately one block from the airport boundary (presumably during takeoff). Reportedly, he had a loss of perception of forward speed after gaining about 100 feet which resulted in decay of rotor rpm. [?] Subsequently, the Gyrocopter entered a descent and made a hard contact wi the ground while in an upright position. No preexisiting mechanical problems were found during an examination of the Gyrocopter.

Findings:
1. In flight collision with terrain/water: Takeoff
Airspeed <> Not maintained <> Pilot in command
Rotor rpm <> Not maintained <> Pilot in command
Qualification <> Pilot in command
Lack of recent experience <> Pilot in command

21-12. NTSB ID No. ATL83LA342

Date: 08/27/83
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 1 person, none

Approximately 400 feet agl, while executing a jump takeoff and a right turn, the aircraft began to settle. It then struck trees and then the ground. The temperature was 100*F. The pilot pilot stated that more attention should have been paid to ambient conditions.

Findings:
1. Altitude deviation, uncontrolled: Takeoff-initial climb
   Weather condition <> Temperature extremes
   Preflight planning/preparation <> Inadequate <> Pilot in command
   Adequate rotor rpm <> Not attained <> Pilot in command
2. In flight collision with object: Takeoff-initial climb
   Object <> Tree(s)

21-13. NTSB ID No. CHI83FA438
Date: 09/23/83
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

SHORTLY AFTER TAKEOFF, THE GYROCOPTER CRASHED ON THE WEST SIDE OF RunwaY 02/20. WITNESSES OBSERVED THE AircrafT TURN TO THE RIGHT AFTER LIFTOFF, THEN IT DISAPPEARED BEHIND TREES. THEY REPORTED HEARING AN UNUSUAL NOISE and STATED THAT THE ENGine STOPPED OPERATING, THEN THEY HEARD THE AircrafT CRASH. REPORTEDLY, THE AircrafT LIFTED OFF FROM THE TAXIWAY BEFORE TURNING DOWN RunWaY 02 TO DEPART. AN EXAM OF THE WRECKAGE WAS MADE, BUT NO PREIMPACT/MECHANICAL FAILURE OR MALFUNCTION WAS FOUND.

Findings:
1. Loss of engine power: Takeoff-initial climb
   Reason for occurrence undetermined <> No modifier specified <> No person specified
2. Forced landing: Landing
   Autorotation <> Initiated <> Pilot in command
3. In flight collision with terrain/water: Landing
   Rotor rpm <> Not maintained <> Pilot in command

21-14. NTSB ID No. CHI84LA024
Date: 10/15/83
Aircraft make: Alderfer Gyroplane*
Damage: Destroyed
Injuries: 1 person, minor

THE PILOT Said HE MADE A NORMAL TAKEOFF AND REACHED AN ALTITUDE OF ABOUT 20 FEET WHEN HE LOWERED THE NOSE TO GAIN AIRSPEED. AS HE REACHED 30 FEET THE GYROPLANE ROLLED OVER AND IMPACTED THE GRASS ON THE RIGHT OF THE RUNWAY. THE PILOT REPORTED HE HAD A STRONG GUSTY HEADWIND CONDITION. CINCINNATI-LUNKEN AIRPORT, 16 MILES AWAY, WAS REPORTING A WIND OF 8 KNOTS.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
   Communications/information/ATC <> Inadequate <> Pilot in command
2. In flight collision with terrain/water: Takeoff-initial climb

21-15. NTSB ID No. DEN84LTI01
Date: 10/16/83
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, serious

THE AIRCRAFT CRASHED INTO TREES DURING A TAKEOFF AND DESCENDED INVERTED TO THE GROUND. THE PILOT STATED HE HAD NOT INTENDED TO FLY A PATTERN BUT MERELY TAKE OFF AND LAND IN A MODIfiED HIGH SPEED TAXI RUN. BUT ON THIS LAST RUN HE RAN OUT OF RUNWAY AND DECIDED TO GO AROUND THE PATTERN. ACCORDING TO THE PILOT THE ENGINE STARTED TO OVERHEAT SO HE REDUCED POWER AND THE AIRCRAFT SETTLED INTO THE TREES.

Findings:

1. Loss of control-in flight: Takeoff-initial climb
   Throttle/power control <> Improper use of <> Pilot in command
   Lack of familiarity with aircraft <> Pilot in command
   Altitude <> Not maintained <> Pilot in command
   Stall [?]/mush <> Not corrected <> Pilot in command
2. In flight collision with object: Takeoff-initial climb
   Object <> Tree(s)
3. In flight collision with terrain/water: Takeoff-initial climb

21-16. NTSB ID No. SEA84LA019
Date: 11/08/83
Aircraft make: Morton B-8M*
Damage: Substantial
Injuries: 1 person, none

THE AIRCRAFT COLLIDED WITH fiR TREES, ABOUT 18 FEET TALL, DURING AN OFF-AIRPORT FORCED LANDING AFTER A POWER LOSS. THE PILOT SUSPECTED CARBURETOR ICE. HE SAID THE ENGINE BEGAN TO RUN ROUGH AND RPM DROPPED TO ABOUT 1200-1500rpm. WHEN HE WAS UNABLE TO CLEAR THE TREES DURING THE LANDING HE SLOWED TO 15 KNOTS AND DESCENDED VERTICALLY INTO THEM. THIS AIRCRAFT HAD NO CARBURETOR HEAT CONTROL. HEAT IS APPLIED TO THE BASE OF THE CARBURETOR FROM THE EXHAUST MANIFOLD. THE DAY AFTER THE ACCIDENT AN A&P MECHANIC FOUND THE ENGINE OPERATION TO BE NORMAL. ON THE DAY OF THE ACCIDENT THE TEMPERATURE WAS 50*F AND THE DEW POINT WAS 40*F.

Findings: 1. Loss of engine power (partial)-mechanical failure/malfunction: Cruise-normal
Fuel system, carburetor <> Ice
Carburetor heat <> Not possible <> Pilot in command
Weather condition <> Carburetor icing conditions
Anti-ice/deice system, carburetor/heat <> Inadequate
2. Forced landing: Landing-flare/touchdown
3. In flight collision with object: Landing-flare/touchdown
Object <> Tree(s)

21-17. NTSB ID No. LAX84LA072
Date: 11/25/83
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, none

THE PILOT WAS OPERATING HIS HOME-BUILT, NON-REGISTERED GYROCOPTER AS AN ULTRALIGHT VEHICLE. REPORTEDLY, THE ENGINE LOST POWER DURING FLIGHT, AND SUBSEQUENTLY THE GYROCOPTER WAS DAMAGED DURING A FORCED LANDING. ACCORDING TO THE PILOT, HE ENCOUNTERED CARBURETOR ICING WHICH RESULTED IN THE LOSS OF POWER. THE ENGINE WAS NOT EQUIPPED WITH A CARBURETOR HEAT SYSTEM. ALSO, THE TEMPERATURE AND DEW POINT WERE 49*F AND 41*F, RESPECTIVELY. ACCORDING TO ICING PROBABILITY CHARTS, A FLOAT-TYPE CARBURETOR COULD ENCOUNTER SERIOUS CARBURETOR ICING CONDITIONS AT THOSE TEMPERATURES.

Findings:

1 Loss of engine power (total)-non-mechanical: Cruise
Planning/decision <> Improper <> Pilot in command
Weather condition <> Carburetor icing conditions Carburetor heat <> Not possible <> No person specified
Fuel system, carburetor <> Ice
2. Forced landing: Landing
3. In flight collision with terrain/water: Landing

21-18. NTSB ID No. MIA84FA104
Date: 03/12/84
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

THE STUDENT PILOT AND THE PILOTS OF TWO OTHER BENSEN GYROCOPTERS TOOK OFF FROM A PRIVATE STRIP AND PROCEEDED TO FLY IN A LOOSE FORMATION. THE PILOTS OF THE OTHER TWO GYROCOPTERS DID NOT WITNESS THE ACCIDENT, BUT NOTICED THAT ONE OF THE THREE WAS MISSING. WITNESSES ON THE

GROUND STATED THAT THEY NOTICED THE GYROCOPTER OSCILLATED UP AND DOWN AND FORE AND AFT PRIOR TO IT IMPACTING WITH TREE TOPS. THE STUDENT PILOT WAS NOT ENDORSED FOR flIGHT IN ANY AIRCRAFT. HIS WIFE STATED THAT HE HAD RECEIVED INSTRUCTION BY USING A TRAINING DEVICE THAT WAS TOWED BEHIND A VEHICLE. NO SIGNS OR EVIDENCE OF PREEXISTING STRUCTURAL FAILURE WERE NOTED.

Findings:

1. Loss of control-in flight: Cruise
   Procedures/directives <> Not maintained <> Pilot in command
   Inadequate training <> Pilot in command
   Judgment <> Poor <> Pilot in command
   Lack of total experience <> Pilot in command
   Overconfidence in personal ability <> Pilot in command
   Airplane handling <> Not maintained <> Pilot in command
2. In flight collision with object: Descent-uncontrolled
   Object <> Tree(s)
3. In flight collision with terrain/water: Descent-uncontrolled

21-19. NTSB ID No. MIA84FA112
Date: 03/16/84
Aircraft make: Swanson-Bensen B-8M*
Damage: Substantial
Injuries: 1 person, fatal

THE STUDENT PILOT WAS TOLD BY THE OWNER OF THE AIRCRAFT TO ONLY TAXI THE AIRCRAFT AND NOT TO flY IT. DURING THE sixTH TAXI MANEUVER IT BECAME AIRBORNE. IT CLIMBED TO ABOUT 200 FeeT agl WHERE THE PILOT MADE A 180* TURN, FOLLOWED BY A 90* TURN, FOLLOWED BY ANOTHER 180* TURN. DURING THIS LAST TURN, THE AIRCRAFT WAS OBSERVED TO PORPOISE OR flUCTUATE IN ALTITUDE. THE MAIN ROTOR BLADE BEGAN TO flAP OR CONE ON THE THIRD PORPOISE. THE AIRCRAFT STRUCK THE GROUND AND ROLLED ON ITS LEFT SIDE ON TOP OF THE PILOT. THE OWNER OF THE AIRCRAFT ESTIMATED THAT THE STUDENT PILOT HAD 23 HOURS OF GYROCOPTER TIME, BUT HAD NOT flOWN IN THE LAST 60 DAYS.

Findings:

1. Loss of control-in flight: Maneuvering
   [Aircraft] handling <> Improper <> Pilot in command
   Lack of recent experience in kind of aircraft <> Pilot in command
2. In flight collision with terrain/water: Maneuvering

21-20. NTSB ID No. NYC84FNE02
Date: 04/29/84
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, serious

THE GYROCOPTER CRASHED AFTER THE PILOT LOST CONTROL OF THE AIRCRAFT IN A WINDY CONDITION, DURING TAKEOFF. A 20* cross-WIND VELOCITY OF 10 KnoTS GUSTING TO 35 KnoTS EXISTED AT THE TIME OF THE ACCIDENT. THE PILOT TOLD HIS WIFE (WHO WROTE THE REPORT ON THE 6120.1 NTSB REPORTING FORM) THAT HE THOUGHT IF THE AIRCRAFT HAD HAD MORE ALTITUDE AT THE TIME OF THE GUST, STABILITY OF THE GYROCOPTER COULD HAVE BEEN MAINTAINED (WITHOUT AN ACCIDENT).

Findings:

1. Loss of control-in flight: Takeoff-initial climb
   Weather condition <> Gusts
   Compensation for wind conditions <> Inadequate <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
   Weather condition <> Crosswind
   Performance data <> Not understood <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
3. Gear collapsed: Descent-uncontrolled

21-21. NTSB ID No. FTW84FA290
Date: 06/29/84
Aircraft make: Griffin FG-1A*
Damage: Destroyed
Injuries: 1 person, fatal

ACCORDING TO WITNESSES, THE GYROCOPTER PILOT TOOK OFF AND TURNED ONTO A LEFT DOWNWIND TO STAY IN THE TRAFfiC PATTERN FOR RUNWAY 17. ONE WITNESS STATED THAT THE GYROCOPTER TURNED ONTO fiNAL APproaCH AT ABOUT 300-400 FeeT agl. TWO OTHER WITNESSES, WHO RESIDE APpRoXimately 14 MILE NORTH OF THE AiRPorT, RELATED THAT THE GYROCOPTER flEW LOW OVER THEIR PROPERTY AT ABOUT 150 FeeT WHILE TURNING ONTO fiNAL. BOTH REPORTED THAT THE ENGine WAS OPERATING AND SOUNDED NOrMAL. ONE INDIVIDUAL STATED THAT THE PILOT WAVED AS HE PASSED OVER HIS BACKYARD. REPORTEDLY, THE GYROCOPTER flEW LOW OVER POWER LINES, CLIMBED TO A MORE NORMAL ALTITUDE, THEN ENTERED A STEEP DESCENT AND CRASHED. ONE WITNESS SAID IT STALLED. [?] ANOTHER SAID IT FELL LIKE A ROCK. IMPACT OCCURRED ABOUT 200 FeeT SHORT OF THE RUNWAY. NO PRE-IMPACT FAILURE OR MALFUNCTION WAS FOUND. LOCAL GYROCOPTER OPERATORS STATED THE PILOT WAS TEACHING HIMSELF TO flY DESPITE RECOMMENDATIONS TO OBTAIN INSTRUCTION.

Findings:

1. Loss of control-in flight: Approach-VFR pattern-final approach
   Planning/decision <> Improper <> Pilot in command
   Inadequate initial training <> Pilot in command
   Airspeed <> Not maintained <> Pilot in command
   Rotor rpm <> Not maintained <> Pilot in command
   Lack of total experience in kind of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-22. NTSB ID No. NYC84FNA02
Date: 08/13/84
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 2 persons, none

CRUISING AT 500 FEET OVER WATER THE PILOT ENCOUNTERED FOG. IN AN EFFORT TO MAINTAIN VISUAL CONTACT WITH THE SHORELINE THE PILOT BEGAN A DESCENT AND BEGAN A TURN TO AVOID THE FOG. DURING THE DESCENDING TURN THE AIRCRAFT GOT LOW AND SLOW AND THE PILOT WAS UNABLE TO CONTROL THE DESCENT. DESPITE FULL POWER THE AIRCRAFT flEW INTO THE SHALLOW WATER.

Findings:

1. In flight encounter with weather: Cruise-normal
   Weather condition <> Fog
   Weather evaluation <> Poor <> Pilot in command
2. In flight collision with terrain/water: Maneuvering-turn to reverse direction
   Terrain condition <> Water, glassy
   Proper descent rate <> Exceeded <> Pilot in command
   Altitude <> Not maintained <> Pilot in command
   Descent <> Uncontrolled <> Pilot in command

21-23. NTSB ID No. CHI84LA347
Date: 08/13/84
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, none

THE STUDENT PILOT WAS IN THE AIRPORT TRAFfiC PATTERN WHEN HE NOTICED THE ENGINE CYLINDER HEAD TEMPERATURE EXCEEDING THE RED LINE. HE ATTEMPTED TO LOWER THE TEMPERATURE BY REDUCING THE ENGINE rpm BUT COULD NOT MAINTAIN ALTITUDE. THE PILOT MANEUVERED THE AIRCRAFT TOWARD THE AIRPORT AND AT APPROXIMATELY 1000 FEET FROM THE RUNWAY, THE ENGINE QUIT. THE PILOT EXECUTED AN EMERGENCY LANDING IN THE WATER. EXAMINATION OF THE ENGINE AFTER THE ACCIDENT REVEALED A SCORCHED CYLINDER.

Findings:

1. Loss of engine power: Approach-VFR pattern-final approach
   Engine assembly <> Undetermined
   Engine assembly, cylinder <> Overtemperature Engine assembly, cylinder <> Binding (mechanical)
2. Forced landing: Descent-emergency
3. Ditching: Landing-flare/touchdown

21-24. NTSB ID No. SEA84FA209
Date: 08/21/84
Aircraft make: Bensen B-8M*

Damage: Destroyed
Injuries: 1 person, fatal

WITNESSES OBSERVED THE AIRCRAFT GO THROUGH A SERIES OF RAPID PITCH OSCILLATIONS AT ABOUT 300 FEET agl. THE PITCH CHANGES INCREASED IN MAGNITUDE AND SEVERITY UNTIL THE MAIN ROTOR BLADES STRUCK THE RUDDER, STOPPING ITS ROTATION AND RESULTING IN AN UNCONTROLLED NEAR VERTICAL DESCENT. THERE WAS NO SOLO ENDORSEMENT ON THE STUDENT'S CERTIfiCATE.

Findings:

1. Loss of control-in flight: Maneuvering
   Flight controls <> Improper use of <> Pilot in command
   Total <> Pilot in command
   Inadequate initial training <> Pilot in command
   Rotor system, main rotor blade <> Movement restricted
   Descent <> Uncontrolled <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Ground

21-25. NTSB ID No. LAX84FUG02
Date: 09/01/84
Aircraft make: Phaneuf B-8M Mod*
Damage: Destroyed
Injuries: 1 person, fatal

WITNESS OBSERVED THE GYROCOPTER CIRCLE THE AIRPORT. ON THE SECOND TIME AROUND, IT DROPPED DOWN LOW ON THE DOWNWIND LEG AND DISAPPEARED BEHIND A SMALL HILL. HE ALSO STATED THE ENGINE WAS RUNNING AT FULL POWER AND THAT HE COULD HEAR THE ROTOR BLADES STRIKE THE GROUND WHEN THE GYROCOPTER CRASHED. NO PREIMPACT MECHANICAL FAILURE OR MALFUNCTION WAS FOUND DURING THE INVESTIGATION. TOXICOLOGICAL TESTS SHOWED THAT THE PILOT'S BLOOD-ALCOHOL LEVEL WAS 0.110%.

Findings:

1. In flight collision with terrain/water: Approach
   Judgment <> Poor <> Pilot in command
   Physical impairment (alcohol) <> Pilot in command
   In-flight planning/decision <> Improper <> Pilot in command
   Rotor rpm <> Not maintained <> Pilot in command
   Descent <> Inadvertent <> No person specified

21-26. NTSB ID No. ATL85FA068
Date: 12/27/84
Aircraft make: Gyrocopter B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

STUDENT PILOT ATTEMPTING flIGHT IN GYROCOPTER. LOSS [OF] CONTROL [CAUSED] MAIN ROTOR SYSTEM TO CONTACT THE RUDDER SYSTEM. PILOT WAS NOT QUALIfiED TO CONDUCT THIS flIGHT. AIRCRAFT WAS NOT ASSIGNED AN IDENTIfiCATION NUMBER.

Findings:

1. Airframe/component/system failure/malfunction: Cruise-normal
   Flight control system, rudder control <> Failure, total
   Flight control system, rudder control <> Overload
   Cyclic <> Improper use of <> Pilot in command
   Inadequate training <> Pilot in command
2. Propeller/rotor contact to person: Cruise-normal
   Flight control system, rudder control <> Failure, total
   Rotorcraft flight controls <> Improper use of <> Pilot in command
3. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Ground

21-27. NTSB ID No. DEN85FTI03
Date: 03/18/85
Aircraft make: Hilliard B-8M*
Damage: Substantial

Injuries: 1 person, none

THE GYROCOPTER INADVERTENTLY BECAME AIRBORNE DURING A HIGH SPEED TAXI RUN. THE PILOT REPORTED THAT AT AN ALTITUDE OF APpRoXimately 10-15 FEET agl HE "CUT THE ENGINE SPEED TO IDLE, AND PULLED THE JOYSTICK FULLY BACK TO LAND." THIS ACTION PUT THE GYROCOPTER IN A NOSE-HIGH ATTITUDE AND THE ROTOR BLADES CONTACTED THE GROUND.

Findings:

1. Hard landing: Landing-flare/touchdown
   Aircraft handling <> Improper <> Pilot in command
   Flare <> Excessive <> Pilot in command
   Anxiety/apprehension <> Pilot in command

21-28. NTSB ID No. LAX85LA201
Date: 04/13/85
Aircraft make: Sederburg-Bensen B-8M*
Damage: Substantial
Injuries: 1 person, serious

FOLLOWING A NORMAL TAKEOFF WITH THE FUEL TANK ONE-HALF FULL, THE AIRCRAFT CLIMBED TO 1000 FEET agl AT WHICH TIME ENGINE POWER WAS GRADUALLY LOST. A GROUND WITNESS REPORTED HEARING THE ENGINE SPUTTER OR MISS. THE PILOT ATTEMPTED TO RETURN TO THE AIRPORT BUT HAD INSUFfiCIENT ALTITUDE AND THE AIRCRAFT COLLIDED WITH A 50-60 FEET TALL TREE. THE REASON FOR THE LOSS OF ENGine POWER IS UNKNOWN. THE PILOT WAS THE BUILDER OF THE EXPERIMENTAL AIRCRAFT AND HAD JUST REINSTALLED THE ENGine PRIOR TO THE ACCIDENT.

Findings:

1. Loss of engine power: Takeoff-initial climb
   Reason for occurrence undetermined <> No modifier specified <> No person specified
2. Forced landing: Descent-emergency
3. In flight collision with object: Descent-emergency
   Object <> Tree(s)
   Object <> Fence
4. Loss of control-in flight: Descent-uncontrolled
5. In flight collision with terrain/water: Descent-uncontrolled

21-29. NTSB ID No. ATL85LA205
Date: 04/21/85
Aircraft make: McCulloch J-2
Damage: Substantial
Injuries: 1 person, none

PILOT WITH 7900 TOTAL HOURS AND FOUR HOURS IN GYrOPLANEs WAS ON SOLO CROSS COUNTRY TRAINING flIGHT. DURING TAKEOFF AT ENROUTE STOP ROTOR BLADES STRUCK VERTICAL STABILIZER. PILOT'S INSTRUCTOR SAID WITNESSES REPORTED THAT THE GYROPLANE WAS ROTATED ABRUPTLY DURING TAKEOFF, RESULTING IN ROTOR BLADES STRIKING THE VERTICAL STABILIZER.

Findings:

1. Abrupt maneuver: Takeoff-roll/run
   Cyclic <> Excessive <> Pilot in command
   Lift-off <> Improper <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
2. Propeller/rotor contact to person: Takeoff-initial climb

21-30. NTSB ID No. ATL85LA172
Date: 05/21/85
Aircraft make: Galloway B-8M*
Damage: Substantial
Injuries: 1 person, minor

THE PILOT STATED THAT THE GYROPLANE WAS BLOWn OFF THE SIDE OF THE RUNWAY BY A GUST OF WIND DURING THE TAKEOFF PORTION OF A TOUCH AND GO LANDING. THE AIRCRAFT TRAVELED INTO A GRASS AREA AND NOSED OVER. THE STUDENT PILOT DID NOT HAVE A SOLO ENDORSEMENT AND HAD ONLY TWO HOURS OF DUAL INSTRUCTION IN A GYROCOPTER WHICH WAS BEING PULLED BY AN AUTOMOBILE.

Findings:

1. On ground/water encounter with terrain/water: Takeoff-roll/run
   Weather condition <> Crosswind
   Weather condition <> Gusts
   Compensation for wind conditions <> Inadequate <> Pilot in command
   Directional control <> Not maintained <> Pilot in command
   Lack of total experience in kind of aircraft <> Pilot in command
2. Nose over: Takeoff-roll/run

21-31. NTSB ID No. CHI85FA209
Date: 05/25/85
Aircraft make: Heekin B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

WITNESS REPORTED HEARING A LOUD BANG AND SEEING THE MAIN ROTOR BLADES STOPPED. THE GYROCOPTER WAS THEN OBSERVED ROTATING SLOWLY IN A CLOCKWISE DIRECTION TO GROUND IMPACT. THE WOODEn PROP (ENGINE-DRIVEN) WAS DEMOLISHED WITH PORTIONS OF IT FOUND UP TO 300 FEET FROM THE ACCIDENT SITE. PROPELLER STRIKE MARKS WERE FOUND ON THE MAIN ROTOR BLADES.

Findings:
1. Airframe/component/system failure/malfunction: Maneuvering
   [Aircraft] handling <> Improper <> Pilot in command
   Rotor system, main rotor blade <> Movement restricted
   Propeller system/accessories,blade <> Disintegrated
2. Loss of control-in flight: Descent-uncontrolled
3. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Ground

21-32. NTSB ID No. NYC85LA154
Date: 06/23/85
Aircraft make: McCulloch J-2
Damage: Substantial
Injuries: 3 persons, minor

ACCORDING TO THE PILOT, THE ROTOR BLADE CONTACTED THE TAIL RUDDERS BECAUSE OF INSUFfiCIENT ROTOR SPEED. THE ROTOR BLADES WERE THROWN OUT OF TRACK AND THE GYROPLANE LOST CONTROL. THE INSUFfiCIENT ROTOR rpm WAS DUE TO A ROTOR OR PULLEY BELT STRIPPING.

Findings:
1. Propeller/rotor contact to person: Taxi-to takeoff
   Rotor drive system, main rotor drive belt <> Undetermined
   Adequate rotor rpm <> Not obtained <> Pilot in command
   Engine instrument <> Inaccurate <> Pilot in command
2. Roll over: Taxi-to takeoff
   Rotor system, main rotor blade <> Disabled
   Directional control <> Not maintained <> Pilot in command

21-33. NTSB ID No. CHI85LA289
Date: 07/11/85
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, none

GYROCOPTER LOST PARTIAL POWER WHILE IN THE TRAFfiC PATTERN AND THE PILOT EXECUTED AN AUTOROTATION INTO A CORN fiELD. THE THROTTLE CABLE WAS FOUND LOOSE AFTER THE ACCIDENT.

Findings:
1. Loss of engine power (partial)-mechanical failure/malfunction: Approach
   Throttle/power lever, cable <> Loose
   Aircraft preflight <> Inadequate <> Pilot in command
2. Forced landing: Descent-emergency
3. In flight collision with terrain/water: Descent-emergency
   Terrain condition <> Ground

21-34. NTSB ID No. CHI85LA312A
Date: 07/22/85
Aircraft make: Frank H. Marchetti Avenger*
Damage: Substantial
Injuries: 2 persons, minor; 2 persons, none

THE GYROPLANE WAS RUNNING UP ON THE END OF THE RUNWAY WHEN THE VARIEZE LANDED ON TOP OF HIM, STRIKING THE ROTOR SYSTEM. THE VARIEZE flEW A NON-STandarD flighT PATTERN AND DID NOT MAKE A RADIO CALL IN THE TRAFFIC PATTERN.

Findings:
1. In flight collision with object: Standing-engine(s) operating
Object <> Aircraft moving on ground
Visual lookout <> Inadequate <> Pilot of other aircraft
Judgment <> Poor <> Pilot of other aircraft
Radio communications <> Not used <> Pilot of other aircraft
Planned approach <> Poor <> Pilot of other aircraft
Procedures/directives <> Not followed <> Pilot of other aircraft

21-35. NTSB ID No. CHI85FA315
Date: 07/26/85
Aircraft make: C.D. Brown Gyroplane*
Damage: Destroyed
Injuries: 1 person, severe

THE PILOT WAS PRACTICING LOW ALTITUDE MANEUVERS, ADJACENT TO THE RUNWAY. WHEN HE TURNED TO MAKE A DOWNWIND, AT THE SOUTHEAST END OF THE RUNWAY, HE IMPACTED WITH THE TERRAIN. WITNESSES STATED THAT THEY OBSERVED THE GYROPLANE MAKING STEEP TURNS AT A LOW ALTITUDE AND IT HAD JUST ENTERED A STEEP LEFT TURN, DOWNWIND AT A 45* NOSEDOWN ANGLE, WHEN THE GYROPLANE flEW INTO THE GROUND.

Findings:
1. Loss of control-in flight: Maneuvering-turn to reverse direction
Inflight planning/decision <> Misjudged <> Pilot in command
Over confidence in personal ability <> Pilot in command
Maneuver <> Excessive <> Pilot in command
Altitude <> Inadequate <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-36. NTSB ID No. MKC85FA182
Date: 08/12/85
Aircraft make: Ronald Houk RD-1*
Damage: Destroyed
Injuries: 1 person, fatal

THE HOME-BUILT GYROCOPTER WAS BEING flOWN BY THE OWNER/BUILDER/DESIGNER WHO HAD AN AIRPLANE, SINGLE-ENGINE, LAND RATING. SHORTLY AFTER THE GYROCOPTER TOOK OFF, THE ENGINE WAS OPERATING AT A HIGH rpm WHEN A WITNESS HEARD A POP/NOISE. SUBSEQUENTLY, THE GYROCOPTER CRASHED IN A CORN FIELD ABOUT 112 MILES FROM THE DEPARTURE POINT. THE MAIN WRECKAGE WAS FOUND INVERTED. ONE ROTOR BLADE, THE OIL COOLER AND THE LEFT VERTICAL STABILIZER AND RUDDER WERE FOUND 60-150 FEET FROM THE MAIN WRECKAGE. BOTH OF THE WOODEN PROP BLADES HAD SHATTERED. THE OIL COOLER HAD BEEN INSTALLED BELOW THE ENGINE AND JUST FORWARD OF THE PROP. ITS UPPER SIDE HAD BEEN ATTACHED WITH A SINGLE SOLID MOUNT USING AN L-SHAPED ALUMINUM STRAP. ITS LOWER SIDE WAS FASTENED WITH A SEMIflEXIBLE MOUNTING. THERE WAS EVIDENCE THAT THE UPPER MOUNT HAD FAILED AND ALLOWED THE OIL COOLER TO MOVE AFT INTO THE PLANE OF ROTATION OF THE PROPELLER BLADES. EXCEPT FOR THE OIL COOLER BRACKET, NO PRE-ACCIDENT MECHANICAL PROBLEMS WERE FOUND.

Findings:
1. Airframe/component/system failure/malfunction: Cruise
Lubricating system <> Failure, partial
Lubricating system, oil cooler <> Separation
Propeller system/accessories, blade <> Overload
Engine assembly, other <> Vibration

Vertical stabilizer surface <> Overload
2. Airframe/component/system failure/malfunction: Cruise
Rotor system, main rotor blade <> Overload
3. Loss of control-in flight: Cruise
4. In flight collision with terrain/water: Descent-uncontrolled

21-37. NTSB ID No. LAX86FA012
Date: 10/13/85
Aircraft make: Ken Brock KB-2*
Damage: Destroyed
Injuries: 1 person, fatal

THE INEXPERIENCED STUDENT PILOT APPLIED EXCESSIVE MAIN ROTOR CONTROL INPUTS WHILE flYING ON THE DOWNWIND LEG OF THE TRAFfiC PATTERN. THE MAIN ROTOR BLADES flEXED DOWNWARD AND SEVERED THE PUSHING PROPELLER AND EMPENNAGE. THE GYROPLANE PITCHED FORWARD AND COLLIDED WITH THE GROUND.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-downwind
[Aircraft] handling <> Improper <> Pilot in command
Maneuver <> Excessive <> Pilot in command
Cyclic <> Excessive <> Pilot in command
Flight control, rudder <> Loss, total
Lack of familiarity with geographic area <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-38. NTSB ID No. MIA86FA027
Date: 11/09/85
Aircraft make: Parsons B/P Gyrocopter*
Damage: Destroyed
Injuries: 2 persons, fatal

THE INSTRUCTOR PILOT WHO WAS NOT RATED IN HELICOPTERS OR GYROPLANES AND HAD AN EXPIRED INSTRUCTOR'S CERTIFICATE WAS IMPARTING INSTRUCTION TO A STUDENT PILOT IN A TWO-PLACE HOMEBUILT GYROCOPTER. WHEN ON DOWNWIND TURN TO BASE LEG THE STUDENT TIPPED THE ROTOR DISC FORWARD AND THE ROTOR rpm DECAYED. THE ROTOR THEN WAS OBSERVED TO STRIKE THE RUDDER AND IT FAILED. THE AIRCRAFT THEN WAS OBSERVED TO FALL IN UNCONTROLLED flight TO THE GROUND.

Findings:
1. Abrupt maneuver Approach-VFR pattern-base turn
Rotor rpm <> Not maintained <> Dual student
Lack of recent total experience <> Dual student
Remedial action <> Not performed <> Pilot in command (CFI)
Overconfidence in personal ability <> Pilot in command (CFI)
Lack of recent experience in type of aircraft <> Pilot in command (CFI)
2. Propeller/rotor contact to person: Approach-VFR pattern-base turn
Flight control, rudder <> Separation
3. In flight collision with terrain/water: Descent-uncontrolled

21-39. NTSB ID No. LAX86FVD02
Date: 11/12/85
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, fatal

ON NOVEMBER 12, 1985, AT APPROXIMATELY 1345pst AN AMATEUR BUILT Bensen B-8M AIRCRAFT...CRASHED WHILE ON A PLEASURE flIGHT. VFR CONDITIONS PREVAILED AND NO flIGHT PLAN WAS FILED. T AIRCRAFT WAS DESTROYED AND THE PILOT RECEIVED FATAL INJURIES. THE PILOT HELD A PRIVATE CERTIFICATE. THE flIGHT ORIGINATED AT EUREKA MUNICIPAL AIRPORT, EUREKA, CALIFORNIA, AT APPROXIMATELY 1420pst. A WITNESS OBSERVED THE AIRCRAFT ON DEPARTURE MAKE A SHARP TURN, CAUSING THE AIRCRAFT TO INVERT AND FALL TO THE EARTH.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
[Aircraft] handling <> Improper <> Pilot in command

Maneuver <> Excessive <> Pilot in command
Airspeed <> Not maintained <> Pilot in command
Stall [?] <> Uncontrolled <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-40. NTSB ID No. NYC86LA038
Date: 11/19/85
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, none

THE PILOT REPORTED THAT AFTER CLIMBING TO AN ALTitude OF APproximately 200 FeeT AFTER TAKEOFF, THE AIRSPEED DROPPED FROM 50 TO 40mph. THE AIRCRAFT THEN LOST ALTitude AND MUSHED TO GROUND IMPACT. THE PILOT DID NOT HOLD A MEDICAL OR STUDENT PILOT CERTIFICATE.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
Stall [?]/mush <> Not corrected <> Pilot in command
Inadequate training <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-41. NTSB ID No. BFO86FID08
Date: 05/10/86
Aircraft make: Milliken Gyrocopter B-80*
Damage: Destroyed
Injuries: 1 person, fatal

ACCORDING TO A PILOT WITNESS THE ACCIDENT PILOT WAS ATTEMPTING TO COMPENSATE FOR AN INCREASE IN WIND VELOCITY WHEN THE ACCIDENT OCCURRED. THE WITNESS STATED THE PILOT ENTERED A STEEP DIVE TO COMPENSATE FOR THE INCREASE LIFT FOLLOWED BY THE GYROCOPTER BALLOONING DUE TO THE INCREASE IN AIRSPEED WHICH RESULTED FROM THE DIVE. THE GYrOCOPTER THEN NOSED OVER AND THE ROTOR BLADES CONTACTED THE RUDDER. THE GYROCOPTER THEN DESCENDED UNCONTROLLED TO GROUND IMPACT.

Findings:
1. Abrupt maneuver: Maneuvering
Weather condition <> Gusts
In-flight planning/decision <> Improper <> Pilot in command
Compensation for wind conditions <> Excessive <> Pilot in command
2. Loss of control-in flight: Maneuvering
[Aircraft] handling <> Not maintained <> Pilot in command
3. In flight collision with terrain/water: Descent-uncontrolled

21-42. NTSB ID No. FTW86FRG26
Date: 06/10/86
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

THE AIRCRAFT CRASHED OUT OF CONTROL AFTER THE ENGine STOPPED DURING A LANDING APPROACH. THE AIRCRAFT HAD ALMOST COMPLETED THE firST PATTERN AROUND THE FIELD WHEN THE ENGine STOPPED. INVESTIGATION REVEALED A 14 INCH NYLON ROPE WRAPPED AND TIED AROUND THE ROTOR BLADE ABOUT 30 INCHES FROM THE TIP. THIS WAS A PART OF THE ROPE THAT THE PILOT hAD USED TO TIE THE ROTOR DOWN WHILE THE AIRCRAFT WAS NOT BEING OPERATED. THE ROPE APPEARED TO HAVE SLIPPED DOWN THE BLADE FROM THE HUB AREA.

Findings:
1. Loss of engine power (total)-non-mechanical: Approach-VFR pattern-final approach
Rotor system, main rotor blade <> Foreign object
Aircraft preflight <> Inadequate <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-43. NTSB ID No. LAX86FUG03
Date: 06/16/86
Aircraft make: Bensen-Jansen B-8M*

Damage: Destroyed
Injuries: 1 person, fatal

THE AIRCRAFT COLLIDED WITH POWER LINES CROSSING THE AIRSTRIP AT MIDFIELD AND CRASHED ON THE RUNWAY. A WITNESS STATED THAT THE PILOT HAD BEEN BRIEFED ON THE Power LINES PRIOR TO THE flight.

Findings:
1. In flight collision with object: Maneuvering
   Object <> Wire, transmission
   Planning/decision <> Inadequate <> Pilot in command
   Visual lookout <> Inadequate <> Pilot in command
   Altitude <> Inadequate <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Runway

21-44. NTSB ID No. LAX86FVG06
Date: 07/24/86
Aircraft make: Barnett J-3*
Damage: Substantial
Injuries: 1 person, none

THE LANDING ACCIDENT OCCURRED AFTER THE PILOT HAD MADE HIGH SPEED TAXI TESTS ALONG THE RUNWAY WITH THREE LIFTOFFS. AFTER THE THIRD LIFTOFF, THE PILOT SAID THAT HE FOUND HIMSELF TOO HIGH. HE STATED THAT HE REDUCED POWER AND PUSHED FORWARD ON THE CONTROL STICK. THE AIRCRAFT CONTACTED THE GROUND ON THE NOSE WHEEL, WHICH COLLAPSED AND THE AIRCRAFT NOSED OVER. ALTHOUGH THE PILOT HELD A PRIVATE PILOT CERTIFICATE WITH AN AIRPLANE SINGLE-ENGINE LAND RATING, THIS WAS HIS FIRST fIIGHT IN A GYROPLANE.

Findings:
1. In flight collision with terrain/water: Landing-flare/touchdown
   Rotation <> Misjudged <> Pilot in command
   Lack of familiarity with aircraft <> Pilot in command
2. Nose gear collapsed: Landing-flare/touchdown
   Nose over <> Landing-roll

21-45. NTSB ID No. FTW86LQG17
Date: 07/27/86
Aircraft make: McCulloch J-2
Damage: Destroyed
Injuries: 2 persons, none

PILOT ATTEMPTED TAKE OFF FROM PASTURE. JUST AFTER LIFT OFF THE NOSE GEAR CAUGHT ON A SINGLE STRAND ELECTRIC FENCE AND BROUGHT AIRCRAFT TO A STOP WHERE IT ROLLED OVER. THE PILOT'S flight TIME WAS NOT REPORTED OR AVAILABLE.

Findings:
1. In flight collision with object: Descent-emergency
   Object <> Wire, static
   Visual lookout <> Poor <> Pilot in command
   Judgment <> Poor <> Pilot in command
2. Roll over: Descent-uncontrolled

21-46. NTSB ID No. NYC86FGM07
Date: 09/13/86
Aircraft make: Tapaszy-Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

THE Bensen B-8M Gyrocopter WAS OBSERVED TO TAKE OFF AND TRANSITION TO LEVEL fIIGHT. THE NOSE OF THE AIRCRAFT WAS THEN OBSERVED TO DIP AND THEN THE AIRCRAFT BANKED LEFT AND CRASHED. THE AIRCRAFT WAS DESTROYED AND THE PILOT RECEIVED FATAL INJURIES. NO PRE-EXISTING FAILURE OR MALFUNCTION WAS FOUND. THE REASON FOR THE LOSS OF CONTROL COULD NOT BE DETERMINED. THE PILOT'S flight TIME WAS NOT REPORTED OR AVAILABLE. THE PILOT WAS NOT CERTIFICATED FOR flight.

Findings:

1. Loss of control-in flight: Cruise
   Reason for occurrence undetermined <> No modifier specified <> No person specified
   Light condition <> Daylight
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Open field

21-47. NTSB ID No. SEA86FYE01
Date: 09/23/86
Aircraft make: Jerome Dodge B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

THE GYROCOPTER WAS OBSERVED OSCILLATING IN fllGHT PRIOR TO DESCENDING TO GROUND IMPACT. INVESTIGATION REVEALED INfllGHT CONTACT BETWEEN THE MAIN ROTOR AND VERTICAL FIN/PUSHER PROPELLER HAD TAKEN PLACE. NO MECHANICAL FAILURE WAS FOUND WHICH WOULD HAVE RESULTED IN THE CONTACT.

Findings:

1. Airframe/component/system failure/malfunction: Approach-VFR pattern-downwind
   Flight controls <> Improper use of <> Pilot in command
   Design stress limits of aircraft <> Exceeded <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-48. NTSB ID No. CHI86LA232
Date: 09/26/86
Aircraft make: McCulloch J-2
Damage: Destroyed
Injuries: 1 person, serious

JUST AFTER LIFT OFF, WHILE TAKING OFF WITH A TAILWIND, THE PILOT DIVERTED HIS ATTENTION TO THE INSTRUMENT PANEL AND DID NOT REALIZE THE [gyroplane] was goIng into an unusual attitude. He said that when he did notice what had happened, he "just got ready for the crash." He did not hold the proper certificate for this aircraft and had only seven hours of gyroplane EXPERIENCE.

Findings:

1. In flight collision with terrain/water: Takeoff
   Procedures/directives <> Not followed <> Pilot in command
   Qualification <> Pilot in command
   Weather condition <> Tailwind
   [Aircraft] handling <> Improper <> Pilot in command
   Proper climb rate <> Not maintained <> Pilot in command
   Diverted attention <> Pilot in command

21-49. NTSB ID No. ATL87DLQ01
Date: 02/01/87
Aircraft make: Air Command Elite 532*
Damage: Destroyed
Injuries: 1 person, fatal

WHILE CONDUCTING LOCAL TRAFFIC PATTERN TRAINING, THE GYROPLANE UNDERSHOT RUNWAY 22 DURING AN ATTEMPTED LANDING. THE PILOT WAS KILLED IN THE CrASH. THE INVESTIGATION FAILED TO DISCLOSE ANY AIRCRAFT PROBLEMS. THE AUTOPSY REVEALED SEVERE CORONARY ARTERIOSCLEROSIS WITH FOCAL COMPLETE OCCLUSION OF THE LEFT ANTERIOR DESCENDING ARTERY, 75% NARROWING OF THE RIGHT CORONARY ARTERY, 50% NARROWING OF THE LEFT CIRCUMflEX CORONARY ARTERY, AND INTRAMYOCARDIAL INTERSTITIAL FIBROSIS WITH SCATTERED HEALED MICROINFARCTS. THE PATHOLOGIST CONSIDERED CARDIAC ARRHYTHMIA, IMMEDIATELY PRIOR TO THE CRASH, TO BE HIGHLY PROBABLE. THE PILOT HAD CORONARY BYPASS SURGERY IN 1983. HIS APPLICATION FOR A MEDICAL CERTIFICATE WAS DENIED 9/16/84. THE PILOT'S CERTIFICATE AND MEDICAL FOUND AFTER THE ACCIDENT WERE FORGERIES ACCORDING TO THE FAA.

Findings:

1. Loss of control-in flight: Approach-VFR pattern-final approach
   Incapacitation (other cardiovascular) <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-50. NTSB ID No. CHI87DEE05
Date: 03/08/87
Aircraft make: Resney Commander 447*
Damage: Substantial
Injuries: 1 person, serious

THE AIRCRAFT MADE A FORCED LANDING IN A FIELD DUE TO FUEL STARVATION. THE ACCident PILOT OFFERED TO flY THE AIRCRAFT OUT. HE HAD 30 MINutes OF DUAL flight IN THIS TYPE AIRCRAFT. HE SAT ON THE LEFT SIDE OF THE AIRCRAFT FOR THE flight WHICH RESULTED IN AN UNBALANCED CONDITION. THE AIRCRAFT ENTERED A LEFT TURN DURING TAKEOFF THAT WAS NOT CORRECTED AND COLLIDED WITH THE GROUND IN A STEEP LEFT BANK. PILOTS EXPERIENCED WITH THIS TYPE AIRCRAFT INDICATED THAT A PILOT flYING ALONE IN THIS AIRCRAFT WOULD NEED TO SIT IN THE MIDDLE OF THE BENCH SEAT AND ALSO KEEP HIS WEIGHT FORWARD INSTEAD OF LEANING BACK TO GET THE NOrmAL CONTROL RESPONSE.

Findings:
1. Loss of control-in flight: Takeoff
   Preflight planning/preparation <> Inadequate <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
   Aircraft weight and balance <> Improper <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-51. NTSB ID No. MIA87LA11
Date: 03/16/87
Aircraft make: Kenney Deward B-8M*
Damage: Substantial
Injuries: 1 person, serious

WHILE PRACTICING POWER-OFF LANDINGS DOWNWIND THE flIGHT ENCOUNTERED A GUST AT WHICH TIME THE PILOT LOST CONTROL. THE AIRCRAFT DESCENDED RAPIDLY, STRIKING THE GROUND, AND THEN CARTWHEELING.

Findings:
1. In flight encounter with weather: Approach-VFR pattern-final approach
   Weather condition <> Gusts
2. Loss of control-in flight: Approach-VFR pattern-final approach
   Airspeed <> Not maintained <> Pilot in command
   Weather condition <> Tailwind
   Wrong runway <> Selected <> Pilot in command
   Throttle/power control <> Reduced <> Pilot in command
   Total <> Pilot in command
3. In flight collision with terrain/water: Descent-uncontrolled

21-52. NTSB ID No. LAX87DUJ04
Date: 03/28/87
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, fatal

WITNESSES STATED THAT THE HOMEBUILT GYROCOPTER ENTERED A STEEP CLIMB AND APPEARED TO ROLL COMPLETELY OVER. HALFWAY THROUGH THE ENGINE BACKFIRED AND THEN QUIT. THE AIRCRAFT WENT INTO A STEEP DIVE. THE AIRCRAFT IMPACTED THE TERRAIN NEAR VERTICALLY.

Findings:
1. Loss of control-in flight: Climb
   Flight controls <> Improper use of <> Pilot in command
   Directional control <> Not maintained <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-53. NTSB ID No. ATL87LAI05
Date: 04/05/87
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 1 person, serious

THE PILOT REPORTED THAT HE SPUN THE ROTOR UP TO 350rpm IN PREPARATION FOR A MAXIMUM PERFORMANCE TAKEOFF. DURING TAKEOFF ROLL, THE GYROPLANE EXPERIENCED GROUND RESONANCE.

THE PILOT REDUCED THE THROTTLE TO IDLE, BUT THE OSCILLATIONS CONTINUED AND THE Right maIN LanDinG GEAR COLLAPSED. THE ROTOR SUBSEQUENTLY STRUCK THE RUNWAY AND TORE LOOSE FROM THE GYROPLANE. THE PILOT NOTED THAT SLIGHT BARELY NOTICEABLE UNDULATIONS EXISTED IN THE PORTION OF THE RUNWAY SURFACE USED DURING THE TAKEOFF ROLL. THE FAA APPROVED FlighT MANUAL (AFM) FOR THE GYROPLANE CONTAINS NO EMERGENCY OPERATION PROCEDURES FOR GROUND RESONANCE. THE AIRCRAFT OPERATOR REPORTED THAT THE PILOT WAS TAUGHT TO TAKEOFF IF SUFFICIENT ROTOR rpm WAS AVAILABLE IN THE EVENT OF GROUND RESONANCE. THE AFM STATES THAT ANY AIRSPEED MAY BE USED FOR TAKEOFF IF THE ROTOR DOES NOT DECAY BELOW [240]rpm.

Findings:

1. Main gear collapsed: Takeoff-roll/run
   Terrain condition <> Rough/uneven
   Unsuitable terrain or takeoff/landing/taxi area <> Selected <> Pilot in command
   Remedial action <> Inadequate <> Pilot in command
   Condition(s)/step(s) not listed <> Manufacturer
   Inadequate certification/approval-Aircraft <> FAA (organization)
   Design stress limits of aircraft <> Exceeded <> Pilot in command
   Landing gear, main gear <> Overload
   Landing gear, main gear <> Failure, total
2. Dragged wing, rotor, pod, float or tail/skid: Takeoff-roll/run
   Terrain condition <> Runway

21-54. NTSB ID No. CHI87DER07
Date: 05/15/87
Aircraft make: Air Command*
Damage: Destroyed
Injuries: 1 person, fatal

BEFORE flight THE PILOT HAD STATED THAT HIS UNCERTIfiED AND UNREGISTERED GYROPLANE HAD A "LOT OF BUGS TO WORK OUT." AFTER takeoff AND FIVE MINutes OF AIRWORk THE AIRCRAFT ENTERED A STEEP 90* BANKED TURN AND THEN BEGAN TO TUMBLE. SHORTLY AFTER THE MAIN ROTOR SEPARATED. NO RECORD COULD BE FOUND OF TRAINING IN THIS TYPE AIRCRAFT.

Findings:

1. Abrupt maneuver: Maneuvering
   Operation with known deficiencies in equipment <> Intentional <> Pilot in command
   Over confidence in personal ability <> Pilot in command
   [Aircraft] handling <> Improper <> Pilot in command
   Inadequate training <> Pilot in command
2. Airframe/component/system failure/malfunction: Maneuvering
   Rotor system <> Separation
3. In flight collision with terrain/water: Descent-uncontrolled

21-55. NTSB ID No. ATL87DLQ03
Date: 05/19/87
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 1 person, minor

THE GyrOPLANE HAD BEEN OVErhAULED TO NEW SPECIfiCATIONS AND WAS MAKING ITS fiRST TEST flIGHT. DURING TAKEOFF THE AIRCRAFT EXPERIENCED A SLIGHT LEFT YAW, AND ATTEMPTS TO CORRECT THE YAW ONLY INCREASED IT. THE PILOT ABORTED THE TAKEOFF AND THE AIRCRAFT LANDED IN A yAWED CONDITION. POST-ACCIDENT INSPECTION REVEALED THAT THE RUDDER CABLES HAD BEEN INCORRECTLY HOOKED UP, RESULTING IN REVERSE RUDDER COMMAND.

Findings:

1. Loss of control-in flight: Takeoff-roll/run
   Flight control system, rudder control <> Incorrect
   Maintenance, installation <> Improper <> Other maintenance personnel
   Maintenance, inspection of aircraft <> Inadequate <> Other maintenance personnel
   Aircraft preflight <> Inadequate <> Pilot in command
   Aborted takeoff <> Performed <> Pilot in command
2. Main gear collapsed: Landing
   Landing gear, main gear <> Overload
   Landing gear, main gear <> Failure, total

21-56. NTSB ID No. FTW87DRD06
Date: 06/28/87
Aircraft make: Air Command 532*
Damage: Destroyed
Injuries: 1 person, fatal

WITNESSES OBSERVED THE GYROPLANE flYING AT 10-15 FEET agl WHEN IT STARTED A TURN TO THE RIGHT. IT CONTINUED THE RIGHT TURN AND DESCENDED INTO THE GROUND. DR. MOORE OF THE FAA SW REGIONAL FIIGHT SURGEON'S OFFICE STATED THAT THE PILOT HAD CORONARY DISEASE AND THAT HE WAS INCAPACITATED AND POSSIBLY UNCONSCIOUS WHEN THE ACCIDENT OCCURRED DUE TO A HEART ATTACK SUFFERED DURING THE fIIGHT. RECORDS INDICATED THAT THE PILOT'S LAST MEDICAL WAS DATED AUGUST 16, 1984.

Findings:
1. In flight collision with terrain/water: Descent-uncontrolled
Remedial action <> Not possible <> Pilot in command
Incapacitation (heart attack) <> Pilot in command

21-57. NTSB ID No. MKC87FA148
Date: 07/27/87
Aircraft make: Watts 532 Elite*
Damage: Substantial
Injuries: 1 person, fatal

WITNESSES LOCATED 1/4 MIle NORTH OF THE ACCIDENT SITE, OBSERVED THE GYROCOPTER DEPARTING THE DAVENPORT, Iowa, AIRPORT AND TURNING TO THE SOUTHWEST. WHILE IN CRUISE fIIGHT THE WITNESSES OBSERVED THE AIRCRAFT MOVING IN AN UP AND DOWN MOTION PRIOR TO WHAT APPEARED TO BE PARTS OF THE GYROCOPTER flYING OFF. THE GYROCOPTER THEN FELL VERTICALLY INTO A CORNFIELD. ON SCENE INVESTIGATION REVEALED THAT THE RUDDER WAS STRUCK BY THE MAIN ROTOR BLADE WHICH SEPARATED FROM ITS MOUNTING. A NEARBY WEATHER REPORTING STATION REPORTED A WIND CHANGE OF NEARLY 80* AND WIND GUSTS TO 26 KNOTS DURING THE fIIGHT. LOCAL OPERATORS OF THE SAME TYPE OF GYROCOPTER INDICATED THE "fIIGHT CONTROLS WERE EXTREMELY SENSITIVE INfIIGHT AND OVERCONTROL IS POSSIBLE WHEN IN TURBULENT WIND CONDITIONS." NO PREIMPACT MECHANICAL MALFUNCTIONS/FAILURES WERE FOUND.

Findings:
1. Loss of control-in flight: Cruise
Weather condition <> Gusts
[Aircraft] handling <> Improper <> Pilot in command
Compensation for wind conditions <> Excessive <> Pilot in command
Lack of total experience in type of aircraft <> Pilot in command
2. Airframe/component/system failure/malfunction: Cruise-normal
Flight control, rudder <> Separation
Design stress limits of aircraft <> Exceeded <> Pilot in command
3. In flight collision with terrain/water: Descent-uncontrolled

21-58. NTSB ID No. NYC87DNE05
Date: 09/01/87
Aircraft make: Hall B-80M*
Damage: Substantial
Injuries: 1 person, minor

THE GYROCOPTER WAS OBSERVED TO TOUCH DOWN AND BECOME AIRBORNE AGAIN. AFTER BECOMING AIRBORNE IT WAS OBSERVED TO PITCH DOWN, WITH THE MAIN ROTOR BLADES STRIKING THE GROUND IN FRONT OF THE AIRCRAFT. THE PILOT SAID HIS RIGHT CONTACT LENS WAS BOTHERING HIM AND HE COULD NOT SEE THROUGH IT VERY WELL. HE STATED THAT ALTHOUGH HE THOUGHT HE WAS TOO HIGH AND CONSIDERED A GO-AROUND, HE ELECTED TO CONTINUE WITH THE LANDING BECAUSE OF THE CONTACT LENS PROBLEM. HE SAID WHEN HE TOUCHED DOWN HE SWERVED TO AVOID BUSHES AND A ROTOR BLADE STRUCK THE GROUND SEVERING THE MAST.

Findings:
1. Loss of control-on ground/water: Landing-flare/touchdown
[Aircraft] handling <> Misjudged <> Pilot in command

Directional control <> Not maintained <> Pilot in command
Physical impairment (visual deficiency) <> Pilot in command
Self-induced pressure <> Pilot in command
2. On ground/water encounter with terrain/water: Landing-roll

21-59. NTSB ID No. CHI87DEC05
Date: 09/25/87
Aircraft make: Willi/Bensen B-8M*
Damage: Substantial
Injuries: 1 person, none

AS THE STUDENT PILOT WAS TAKING OFF IN HIS EXPERIMENTAL HOME BUILT GYROPLANE, THE ENGINE LOST POWER, SHORTLY AFTER LIFT-OFF. SUBSEQUENTLY, THE GYROPLANE WAS DAMAGED DURING AN EMERGENCY LANDING. AN EXAMination OF THE FUEL SYSTEM REVEALED THAT TANK SEALER HAD DETERIORATED ON THE INSIDE OF THE SEAT TANK AND HAD DROPPED IN THE FUEL. SUBSEQUENTLY, A CHECK VALVE FOR A RUBBER HAND BULB (USED TO PRIME THE FUEL PumpS) HAD BECOME STUCK. THIS RESULTED IN BLOCKAGE OF FUEL TO THE ENGINE.

Findings:
1. Loss of engine power (total)-mechanical failure/malfunction: Takeoff
Fuel system, tank <> Deteriorated
Inadequate quality control <> Production/design personnel
Fuel system, primer system <> Blocked (total)
Fluid, fuel <> Starvation
2. Forced landing: Landing
3. In flight collision with terrain/water: Landing-flare/touchdown

21-60. NTSB ID No. NYC88DNE01
Date: 11/04/87
Aircraft make: Lamb Commander Elite*
Damage: Substantial
Injuries: 1 person, fatal

SEVERAL WITNESSES OBSERVED THE PILOT PERFORMING REPEATED LOW LEVEL "FAST TAXI" MANEUVERS IN HIS HOMEBUILT GYROCOPTER. THEY STATED THAT THE PILOT [AIR]-TAXIED PARALLEL TO THE RUNWAY AT AN ESTIMATED 4-5 FEET ABOVE THE GROUND. WITNESSES STATED THAT "HE SEEMED TO BE HAVING TROUBLE.HE WOULD STOP, UNBUCKLE AND EXAMINE THE ROTOR HEAD, MAKE SOME ADJUSTMENTS GET BACK IN AND TAXI (AGAIN)." DURING THE LAST ATTEMPT TO FAST TAXI, THE GYROCOPTER WAS OBSERVED flYING AT ABOUT five FEET ABOVE THE GROUND, "THEN WENT UP INTO THE AIR APPROXIMATELY 50 FEET, BUT IT WAS VERY ERRATIC IT THEN DIVED INTO THE GROUND." ANOTHER WITNESS STATED THAT THE AIRCRAFT SWAYED FROM SIDE TO SIDE BEFORE IT "PLUNGED TOWARDS THE GROUND AND CRASHED." INSPECTION OF ENGINE AND AIRFRAME DID NOT SHOW ANY EVIDENCE OF A MaLFUNCTION.

Findings:
1. Loss of control-in flight: Taxi-aerial
Reason for occurrence undetermined <> No modifier specified <> No person specified
Maintenance, adjustment <> Performed <> Pilot in command
2. In flight collision with terrain/water: Taxi-aerial

21-61. NTSB ID No. LAX88DUQ02
Date: 11/21/87
Aircraft make: Isgrigg Elite*
Damage: Substantial
Injuries: 1 person, minor

THE HOMEBUILT GYROPLANE BECAME UNCONTROLLABLE DURING TAKE-OFF ROLL ON RUNWAY 27R. THE AIRCraFT PITCHED UP AND THEN ROLLED ON ITS LEFT SIDE. THE NATIONAL WEATHER SERVICE REPORTED THE WINDS IN THE AREA AT THE TIME OF THE ACCIDENT TO BE FROM 290* AT 12-15 KNOTS. THE PILOT INDICATED IN HIS STATEMENT THAT HE BELIEVED HE ENCOUNTERED CYCLONIC WIND PHENOMENA KNOWN AS "DUST DEVILS."

Findings:
1. On ground/water encounter with weather Takeoff-roll/run
Weather condition <> Crosswind

Compensation for wind conditions <> Not performed <> Pilot in command
Abort <> Not performed <> Pilot in command
2. Loss of control-on ground/water Takeoff-roll/run

21-62. NTSB ID No. SEA88LA064
Date: 03/19/88
Aircraft make: Marlow Hilyard Executive*
Damage: Destroyed
Injuries: 1 person, serious; 1 person, none

THE PILOT MADE A LANDING ON SLOPING TERRAIN. THE GYROCOPTER ROLLED TO THE LEFT WITH THE MAIN ROTOR STRIKING SAGE BRUSH. THE ENGINE WAS TWISTED FROM ITS MOUNTS, RUPTURING A FUEL LINE, A FIRE RESULTED CONSUMING THE GYROCOPTER. THE PILOT DID NOT HOLD A PILOT OR MEDICAL CERTIFICATE BUT REPORTED 155 HOURS EXPERIENCE IN THE AIRCRAFT.

Findings:
1. Roll over Landing-flare/touchdown
Unsuitable terrain or takeoff/landing/taxi area <> Selected <> Pilot in command
Terrain condition <> Downhill

21-63. NTSB ID No. MIA88FA197
Date: 06/18/88
Aircraft make: Kennedy Skycycle 2
Damage: Destroyed
Injuries: 1 person, fatal; 1 person, serious

THE GYROPLANE WAS ON A LOCAL DEMONSTRATION flight. THE PASSENGER STATED THE PILOT TOOK OFF, CLIMBED TO approximately 500 FeeT agl, DESCENDED TO approximately 20 feet agl AND MANEUVERED NEAR OBSERVERS. HE SAID THE PILOT THEN ADDED POWER AND INITIATED A 30* CLIMB ATTITUDE. THE passenger REMEMBERED EXPERIENCING A NEGATIVE "G" SENSATION AND SAID THE PILOT WAS MOVING THE STICK AROUND, TRYING TO FIND OUT "WHERE THEY WERE." THE GYROPLANE THEN DESCENDED AND STRUCK THE GROUND. AN EXAMination OF THE AIRCRAFT REVEALED NO EVIDENCE OF FAILURE OR MALFUNCTION OF THE POWERPLANT, AIRFRAME OR flight CONTROLS. THE PILOT DID NOT HAVE THE REQUIRED ROTORCRAFT CATEGORY AND GYROPLANE CLASS RATING. HIS MEDICAL CERTIFICATE REQUIRED HIM TO WEAR CORRECTING LENSES WHILE EXERCISING THE PRIVILEGES OF HIS AIRMAN CERTIFICATE. ACCORDING TO A WITNESS, THE PILOT WAS NOT WEARING GLASSES. THE GYROPLANE HAD NOT BEEN ISSUED AN AIRWORTHINESS CERTIFICATE BY THE FAA.

Findings:
1. In flight collision with terrain/water: Maneuvering
Procedures/directives <> Not followed <> Pilot in command
Inadequate certification/approval-Aircraft <> Company/operator management
Rotorcraft flight controls <> Improper use of <> Pilot in command
Rotor rpm <> Not maintained <> Pilot in command
Altitude <> Misjudged <> Pilot in command
Visual/aural perception <> Pilot in command

21-64. NTSB ID No. ANC88DAG06
Date: 07/17/88
Aircraft make: Air Command Elite 532*
Damage: Substantial
Injuries: 1 person, none

DURING LANDING APPROACH AN EXCESSIVE RATE OF DESCENT DEVELOPED VERY NEaR THE RUNWAY. THE GYROPLANE LANDED HARD. AFTER THE HARD LANDING THE PILOT REPORTED THAT HE PULLED THE CONTROL COLUMN TO ITS AFT POSITION ABRUPTLY. THE SMALL TAIL WHEEL STRUCK THE RUNWAY SURFACE AND FAILED.

Findings:
1. Hard landing: Landing-flare/touchdown
Flare <> Improper <> Pilot in command

21-65. NTSB ID No. CHI88DEI02
Date: 07/18/88
Aircraft make: Geddes Commander 503*

Damage: Substantial
Injuries: 1 person, serious

THE GYROPLANE STRUCK A TREE WITH THE MAIN ROTOR BLADES AND DESCENDED OUT OF CONTROL INTO TERRAIN. THE PILOT WAS ATTEMPTING TO STRETCH A PARTIAL POWER EMERGENCY DESCENT TO REACH HIS INTENDED TOUCH DOWN POINT. THE PILOT REPORTED A PARTIAL POWER LOSS. NO MALFUNCTIONS OR MECHANICAL FAILURES WERE FOUND.

Findings:

1. Loss of engine power (partial)-non-mechanical: Takeoff-initial climb
   Reason for occurrence undetermined <> No modifier specified <> No person specified
   Aborted takeoff <> Not performed <> Pilot in command
2. Forced landing Descent-emergency
   Proper glidepath <> Misjudged <> Pilot in command
3. In flight collision with object: Descent-emergency
   Object <> Tree(s)

21-66. NTSB ID No. FTW88DRA15
Date: 07/23/88
Aircraft make: Air Command Elite 532*
Damage: Destroyed
Injuries: 1 person, fatal

AIRCRAFT WAS OBSERVED TO TAKEOFF AND TURN RIGHT CROSSWIND. During THE CROSSWIND, THE [engine] rpm INCREASED SUDDENLY. THE AIRCRAFT PITCHED NOSE DOWNWARDS, IMPACTED THE GROUND IN A VERTICAL DESCENT AND BURNED. THE PILOT/BUILDER HAD A TOTAL OF five hours IN THE NEW AIRCRAFT. NO EVIDENCE OF PREIMPACT STRUCTURAL, ROTOR, OR SYSTEM FAILURE WAS FOUND DURING THE INVESTIGATION. A REPRESENTATIVE OF THE MANUFACTURER OF THE KITS FOR THE AIRCRAFT INDICATED THAT THE AIRCRAFT IS EASY TO OVERCONTROL AND CAN LEAD TO PORPOISING WHICH IS DIFFICULT TO CORRECT.

Findings:

1. Loss of control-in flight: Takeoff-initial climb
   Aircraft control <> Not maintained <> Pilot in command
   Porpoise <> Inadvertent <> Pilot in command
   Lack of familiarity with aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-67. NTSB ID No. CHI88DEP13
Date: 09/21/88
Aircraft make: Heibel Air Command 532*
Damage: Destroyed
Injuries: 1 person, fatal

WHILE IN CRUISE fIIGHT THIS AMATEUR-BUILT GYROCOPTER EXPERIENCED A MAIN ROTOR STRIKE TO THE RUDDER AND PROPELLER. THE STUDENT PILOT WHO HAD A TOTAL OF EIGHT HOURS fIIGHT TIME, ALL IN THIS AIRCRAFT, WAS CONDUCTING A SOLO fIIGHT IN THIS DUAL CONTROL GYROCOPTER. HE RECEIVED FATAL INJURIES DURING THE IN fIIGHT BREAKUP AND IMPACT WITH THE TERraIN. THE AIRCRAFT WAS DESTROYED. THE FIIGHT MANUAL INDICATES "THE PILOT MUST HAVE AT LEAST 50 HOURS OF SOLO fIIGHT TIME LOGGED IN A COMMANDER GYROPLANE BEFORE ATTEMPTING TO fIY THE 532 COMMANDER DUAL SEAT GYROPLANE..."

Findings:

1. Airframe/component/system failure/malfunction: Cruise-normal
   Procedures/directives <> Not followed <> Pilot in command
   Lack of total experience in type aircraft <> Pilot in command
   Rotorcraft flight controls <> Improper use of <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-68. NTSB ID No. NYC88DPLM02
Date: 09/26/88
Aircraft make: Air Command 532*
Damage: Destroyed
Injuries: 1 person, serious

THE accident OCCURRED AS THE NON-CERTIfiCATED PILOT WAS OPERATING THE NON-REGISTERED GYROPLANE IN THE TraFfiC PATTERN. WITNESSES HEARD A "LOUD CRACK." THEY THEN OBSERVED THE GYROPLANE DESCENDING IN AN APPARENT UNUSUAL ATTITUDE. THE GYROPLANE COLLIDED WITH TREES, ADJACENT TO THE Approach END OF RUNWAY 24 (approximately 240 feet SSE OF THE THRESHOLD). SUBSEQUENTLY, IT CAME TO REST, NORTH OF THE INITIAL IMPACT POINT, BETWEEN THE TREES AND THE EXTENDED RUNWAY CENTERLINE. PIECES OF THE RUDDER MOUNT WERE FOUND IN THE VICINITY OF WHERE THE GYROPLANE CAME TO REST; THE RUDDER MOUNT'S MODE OF FAILURE WAS NOT VERIFIED.

Findings:

1. Airframe/component/system failure/malfunction: Approach
   Reason for occurrence undetermined <> No modifier specified <> No person specified
2. Loss of control-in flight: Approach
   Procedures/directives <> Not followed <> Pilot in command
   Qualification <> Pilot in command
   Inadequate training <> Pilot in command
   Flight control, rudder <> Failure,total
   Aircraft control <> Not maintained <> Pilot in command
3. In flight collision with object: Descent-uncontrolled

21-69. NTSB ID No. FTW89DPA01
Date: 10/01/88
Aircraft make: Shannon J-Bird*
Damage: Substantial
Injuries: 1 person, minor

THE PILOT reported HE WAS MAKING A HIGH SPEED TAXI TEST OF HIS GYROPLANE AFTER INSTALLATION OF A DIFFERENT ENGine AND PROPeller. HE SAID THE GYROPLANE ENcountereD A BUMP ON THE RUNWAY WHICH CAUSED IT TO BECOME AIRBORNE AT ABOUT 35mph (TAKEOFF SPEED WAS 45mph). HE ADDED POWER TO SLOW THE descent BACK TO THE RUNWAY, BUT THE GYROPLANE BOUNCED EVEN HIGHER TO ABOUT 6 feet agl. IT THEN CONTACTED THE RUNWAY NOSEWHEEL FIRST, ROLLED OVER AND SUBSEQUENTLY CAME TO REST IN AN UPRIGHT POSITION WITH SUBSTANTIAL DAMAGE.

Findings:

1. Miscellaneous/other: Taxi
   Airspeed <> Excessive <> Pilot in command
   Airport facilities, runway/landing area condition <> Rough/uneven
   Flight controls <> Improper use of <> Pilot in command
   Lift-off <> Premature <> Pilot in command
2. Hard landing: Takeoff-aborted

21-70. NTSB ID No. ATL89DLT01
Date: 10/14/88
Aircraft make: Cameron Air Command*
Damage: Destroyed
Injuries: 1 person, fatal

WITNESSES OBSERVED THE GYROCOPTER OSCILLATING IN THE PITCH AXIS AS IT PASSED OVERHEAD IN CRUISE flIGHT. A "WHITE OR SHINY" OBJECT DEPARTED THE GYROCOPTER. THE AIRCRAFT THEN ROLLED RIGHT, DESCENDED AND COLLIDED WITH THE TREES AND GROUND, INVERTED. ONE PROPELLER BLADE HAD SEPARATED FROM THE AIRCRAFT AND WAS FOUND 520 FEET FROM THE CraSH SITE. THERE WAS EVIDENCE THAT THE SEPAraTED PROPELLER BLADE AND ONE MAIN ROTOR BLADE HAD COLLIDED INflIGHT.

Findings:

1. Loss of control-in flight: Cruise
   Cyclic <> Improper use of <> Pilot in command
   Improper training <> Pilot in command
   Lack of total experience <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-71. NTSB ID No. MIA89LA020
Date: 10/29/88
Aircraft make: Parsons B-8M*
Damage: Substantial
Injuries: 1 person, minor

DURING AN AIRSHOW, THE PILOT TOOK OFF TO PERFOrM A PLANNED eight [turn] AUTOROTATIVE LANDING FROM AN ALTitude OF approximately 800 feet. AN FAA INSPECTOR WHO OBSERVED THE ACCIDENT STATED THE flight ASCENDED TO approximately 650 feet msl. AFTER CLOSING THE THROTTLE, THE PILOT BEGAN THE MANEUVER. WHILE DESCENDING THROUGH ABOUT 100 feet agl AND HAVING COMPLETED six [turns], THE PILOT CONTINUED THE MANEUVER. SUBSEQUENTLY, THE AIRCRAFT CONTACTED THE GROUND AND WAS DAMAGED. ACCORDING TO THE PILOT, THE AIRCRAFT [was] TOO LOW FOR PULL-OUT AND HIT THE GROUND.

Findings:

1. In flight collision with terrain/water: Maneuvering
   Autorotation <> Improper <> Pilot in command
   Altitude <> Misjudged <> Pilot in command

21-72. NTSB ID No. CHI89DEV02
Date: 11/13/88
Aircraft make: Air Command 503*
Damage: Destroyed
Injuries: 1 person, fatal

THE GYROPLANE WAS DESTROYED AND THE PILOT SUSTAINED FATAL INJURIES, WHEN IT COLLIDED WITH TERRAIN DURING AN UNCONTROLLED DESCENT. RECORDS SHOW THE PILOT HAD ONLY six HOURS OF TOTAL flIGHT TIME, WITH NO TIME IN THE ACCIDENT AIRCRAFT. EXAMINATION OF THE AIRCRAFT DID NOT REVEAL EVIDENCE OF CONTROL SYSTEM OR POWERPLANT FAILURE.

Findings:

1. Loss of control-in flight: Maneuvering
   Aircraft control <> Not maintained <> Pilot in command
   Lack of total experience <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-73. NTSB ID No. LAX89LA055
Date: 11/21/88
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 1 person, none

THE PILOT STATED THAT HE LOST DIRECTIONAL CONTROL OF THE GYROPLANE DURING THE LANDING ROLL, DEPARTED THE RUNWAY AND [rolled] OVER. THE GYROPLANE TOUCHED DOWN NOrMALLY ON THE main LANDING GEAR AT AN INDICATED AIRSPEED OF ABOUT 20mph. AS THE GYROPLANE SLOWED FURTHER, THE NOSE WHEEL TOUCHED DOWN ON THE RUNWAY AND TraCKED THE CENTERLINE FOR ABOUT 10 FEET THEN VEERED TO THE LEFT. THE PILOT STATED THAT HE ATTEMPTED TO CORRECT THE GYROPLANE'S GROUND TRACK BY APPLYING THE RIGHT RUDDER AND brake, BUT THE GYROPLANE CONTINUED TO TIGHTEN IN THE LEFT TURN. INSPECTION OF THE NOSE GEAR ASSEMBLY REVEALED A CRACK IN THE NOSE WHEEL SHIMMY DAMPER UPPER PHENOLIC COLLAR. THE CRACK IN THE COLLAR RESULTED IN THE NOSE WHEEL STRUT BECOMING LOCKED AND NOT ALLOWING NOSE WHEEL STEERING.

Findings:

1. Loss of control-on ground/water: Landing-roll
   Landing gear, nose gear assembly <> Cracked
   Landing gear, nose gear strut <> Locked
2. Dragged wing, rotor, pod, float or tail/skid: Landing-roll

21-74. NTSB ID No. LAX89DVD01
Date: 12/02/88
Aircraft make: Hitchcock JH-1*
Damage: Destroyed
Injuries: 1 person, fatal

PILOT WAS ON INITIAL flight IN NEWLY-BUILT GYROCOPTER. AFTER TAKEOFF, WITNESSES OBSERVED THE AIRCRAFT TO CLIMb TO ABOUT 100 FEET THEN TO NOSE OVER UNTIL GROUND IMPACT. NO EVIDENCE OF MECHANICAL FAILURE WAS FOUND.

Findings:

1. Loss of control-in flight: Takeoff-initial climb
   [Aircraft] handling <> Improper <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command

2. In flight collision with terrain/water: Descent-uncontrolled

21-75. NTSB ID No. MIA89LA060
Date: 12/31/88
Aircraft make: Air Command 532E*
Damage: Substantial
Injuries: 1 person, serious

THE STUDENT PILOT SAID HE DID NOT REMEMBER ANYTHING ABOUT THE ACCIDENT. WITNESSES STATED THAT AT ABOUT 50 feet agl ON FINAL APPROACH THE GYROCOPTER RAPIDLY DESCENDED. IT REMAINED LEVEL AND HIT HARD, ROLLING OVER ON IMPACT. WITNESSES STATED THAT THE ENGINE WAS RUNNING UNTIL IMPACT. THE STUDENT WAS A FORMER MILITARY PILOT.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-final approach
Rotorcraft flight controls <> Improper use of <> Pilot in command
2. Hard landing: Descent-uncontrolled

21-76. NTSB ID No. LAX89DUJ03
Date: 01/15/89
Aircraft make: Murphy Vancraft 532*
Damage: Destroyed
Injuries: 1 person, fatal

DURING A PLEASURE fIIGHT, THE GYROCOPTER COLLIDED WITH TRANSMISSION WIRES. IT SUBSEQUENTLY COLLIDED WITH THE TERRAIN. THE WEATHER AT THE TIME OF THE ACCIDENT WAS CLEAR AND VISIBILITY WAS 50 MILES. NO EVIDENCE OF MECHANICAL FAILURES OR MALFUNCTIONS WAS FOUND. A WITNESS REPORTED THAT THE ENGINE SOUNDED "FINE" AND THAT HE OBSERVED THE GYROCOPTER TO DESCEND JUST BEFORE IMPACT, AS IF THE PILOT WAS ATTEMPTING TO AVOID CONTACT WITH THE WIRES. ANOTHER WITNESS SAID IT APPEARED THAT THE GYROCOPTER WAS IN LEVEL fIIGHT WHEN IT STRUCK WIRES.

Findings:
1. In flight collision with object: Maneuvering
Object <> Wire, transmission
Proper altitude <> Not maintained <> Pilot in command
Visual lookout <> Inadequate <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-77. NTSB ID No. FTW89LA056
Date: 02/23/89
Aircraft make: McCulloch J-2
Damage: Substantial
Injuries: 1 person, none

THE PRIVATE PILOT PROVIDED NO EVIDENCE OF A GYROPLANE ENDORSEMENT AND WAS UNABLE TO EXPRESS A WORKING KNOWLEDGE OF THE AIRCRAFT SYSTEMS OR OPERATIONAL REQUIREMENTS. THE AIRCRAFT WAS ON A DOWNWIND DEPARTURE WHEN IT MADE AN UNCONTROLLED DESCENT TO THE GROUND. THE PILOT STATED that THE PROPELLER "JUST STOPPED PUSHING." THERE WAS NO EVIDENCE OF MECHANICAL MALFUNCTION.

Findings:
1. Loss of control-in flight: Cruise
Rotor rpm <> Not maintained <> Pilot in command
Lack of familiarity with aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-78. NTSB ID No. FTW89DRA03
Date: 03/25/89
Aircraft make: Bensen B-8M*
Damage: Substantial
Injuries: 1 person, none

DURING THE TAKEOFF CLIMB THE AIRCRAFT SUSTAINED A LOSS OF POWER. THE STUDENT PILOT hAD TO

EXTEND THE GLIDE TO CLEAR OBSTACLES DURING THE FORCED LANDING. THE PILOT STATED THE ENGine rpm GRADUALLY DECREASED DURING THE CLIMB TO the point he could not sustain flight. The icing probability charts indicated that conditions were favorable for the formation of visible ice in the induction system at rated power. There was NO OTHER SUITABLE TERRAIN AVAILABLE FOR THE FORCED landing.

Findings:

1. Loss of engine power (partial)-non-mechanical: Climb-to cruise
   Fuel system, carburetor <> Ice
   Carburetor heat control <> Not installed
   Weather condition <> Carburetor icing conditions
2. Forced landing: Descent-emergency
3. Hard landing: Landing-flare/touchdown
   Terrain condition <> None suitable
   Proper descent rate <> Not possible <> Pilot in command

21-79. NTSB ID No. MKC89LA093
Date: 04/21/89
Aircraft make: Huff 1*
Damage: Substantial
Injuries: 1 person, none

THE PILOT SAID THAT, WHILE PRACTICING TAKEOFFS AND LandingS, THERE WAS A PARTIAL LOSS OF ENGine POWER DURING THE third TAKEOFF. SUBSEQUENTLY, AN EMERGency Landing WAS MADE IN A PLOWED FIELD AND THE GYROPLANE WAS DAMAGED WHEN THE ROTOR BLADES CONTACTED THE PUSHER PROPeller. THE WIND WAS Reported TO BE FROM 180* AT 20 GUSTING 25 KnoTS AND THE Reported TEMPerature WAS 85*F. NO SPECIFIC REASON WAS FOUND FOR THE POWER LOSS; THE PILOT HAD JUST INSTALLED THE ENGine AND IT HAD ACCUMULATED ABOUT 12 hour OF OPerationaL TIME.

Findings:

1. Loss of engine power: Takeoff-initial climb
   Reason for occurrence undetermined <> No modifier specified <> No person specified
2. Forced landing: Descent-emergency
3. In flight collision with terrain/water: Landing-flare/touchdown
   Terrain condition <> Soft

21-80. NTSB ID No. MKC89FA109
Date: 05/13/89
Aircraft make: Bensen B-8KSB*
Damage: Substantial
Injuries: 1 person, serious

THE PILOT LOST CONTROL OF THE GYROCOPTER DURING THE ATTEMPTED TAKEOFF. THE ROTOR SYSTEM, RUDDER ASSEMBLY, AND PROPELLER made CONTACT WITH THE TERRAIN. THE PILOT HELD NO AIRMaN Or MEDICAL CERTIFICATES. FAA RECORDS IN Oklahoma City, Oklahoma, REflECT THAT THE GYROCOPTER WAS SOLD IN 1980 WITH NO SUBSEQUENT REGISTRATION.

Findings:

1. Loss of control-on ground/water: Takeoff-roll/run
   Running takeoff <> Attempted <> Pilot in command
   Qualification <> Unqualified person
   Aircraft control <> Not maintained <> Pilot in command
2. On ground/water encounter with terrain/water: Takeoff-roll/run

21-81. NTSB ID No. CHI89FA114
Date: 06/17/89
Aircraft make: McCulloch J-2
Damage: Destroyed
Injuries: 2 persons, fatal

THE AUTOGYRO BROKE UP IN flIGHT WHILE MaNEUVERING DURING A PERSONAL flIGHT. WITNESSES TO THE ACCIDENT REPORTED SEEING THE ROTOR BLADES SLOW AND FOLD UP AS THE AUTOGYRO flEW SLOWLY OVER A LAKE. ONE ROTOR BLADE WAS SEEN TO SEPARATE FROM THE ROTORHEAD AND FALL SOME DISTANCE FROM THE REST OF THE AIRCRAFT. THE AUTOGYRO THEN CRASHED INTO THE LAKE. INSPECTION OF THE WRECKAGE SHOWED THAT THE MAIN ROTOR MAST THRUST BEARING WAS GALLED AND HAD SEIZED.

Findings:

1. Airframe/component/system failure/malfunction Maneuvering
   Rotor drive system, freewheeling unit (other) <> Seized
   Rotor drive system, freewheeling unit (other) <> Life expired
   Maintenance, replacement <> Not performed <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-82. NTSB ID No. SEA89LA114
Date: 06/20/89
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

THE PILOT WAS ATTEMPTING TO SET A WORLD RECORD FOR flIGHT FROM CANADA TO MEXICO IN THE GYROCOPTER. THE PILOT HAD STOPPED AT THE DALLES, [Oregon] IN THE COLUMBIA RIVER GORGE, FOR FUEL. AFTER DEPARTING THE DALLES, THE PILOT flEW SOUTH ALONG A HIGHWAY THAT FOLLOWS A VALLEY EXTENDING FROM THE GORGE TO HIGHER TERRAIN SOUTH OF THE DALLES. THERE ARE STEEP HILLS ON BOTH SIDES OF THE HIGHWAY. THE PILOT WAS flYING approximately 200 feet agl, MaKING PASSES OVER A GROUND CREW WHO WERE FILMING THE flIGHT, WHEN THE AIRCRAFT ABRUPTLY flIPPED INTO AN INVERTED ATTITUDE AND IMPACTED ON A HILLSIDE BY THE HIGHWAY. A MEMBER OF THE GROUND CREW FILMING THE flIGHT ESTIMATED ON THE TAPE BEFORE THE ACCIDENT THAT THE WINDS WERE 40-50mph.

Findings:

1. Loss of control-in flight: Cruise
   Terrain condition <> Mountainous/hilly
   Weather condition <> Mountain wave
   Weather condition <> High wind
   Judgment <> Poor <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-83. NTSB ID No. FTW89DRA07
Date: 07/13/89
Aircraft make: Lowe-Bensen KB-2*
Damage: Destroyed
Injuries: 1 person, fatal

The pilot of N7037K was in a flight of two gyroplanes, flying in-trail of the other aircraft. When last seen by the lead pilot, N7037K was behind, making a diving maneuver toward the ground. The lead pilot stated that throughout their flight, the pilot of the accident aircraft had been flying at altitudes ranging from 1000 feet agl to 50 feet agl, making steep turns in close proximity to trees and terrain. The lead pilot did not see N7037K crash, but found it later, in the vicinity of where he last saw it. N7037K WAS EXTENSIVELY damaged; THERE WAS LITTLE FORWARD MOVEMENT OF THE GYROPLANE AFTER IMPACT. NO PREIMPACT MECHANICAL FAILURE WAS FOUND. THERE WERE NO KNOWN WITNESSES TO THE accident. THE PILOT OF N7037K HELD ONLY A STUDENT PILOT CERTIFICATE.

Findings:

1. In flight collision with terrain/water: Maneuvering
   Judgment <> Poor <> Pilot in command
   Maneuver <> Excessive <> Pilot in command
   Terrain condition <> Open field
   Clearance <> Not maintained <> Pilot in command
   Lack of familiarity with aircraft <> Pilot in command

21-84. NTSB ID No. SEA89LA146
Date: 07/30/89
Aircraft make: Abbott Gyroplane*
Damage: Destroyed
Injuries: 1 person, none

During a takeoff from a rough grassy strip, the gyroplane had not attained sufficient airspeed for liftoff at mid-field. The pilot aborted the takeoff and applied the brakes. The gyroplane did not have sufficient room to stop before colliding with a fence and a building. The pilot reported that there were no mechanical failures or malfunctions with the gyroplane at the time of the accident.

Findings:

1. On ground/water collision with object: Takeoff-aborted
   Aborted takeoff <> Delayed <> Pilot in command

Object <> Building (nonresidential)
Object <> Fence

21-85. NTSB ID No. LAX89LA320
Date: 09/22/89
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 1 person, minor; 1 person, none

The [Certificated] Flight Instructor (CFI) reported that his student had attempted a takeoff at Palo Alto airport on runway 30. The student was unable to maintain directional control, and the gyroplane went off the runway onto a nearby service road without becoming airborne. The instructor then decided to make the takeoff himself from the service road. He said that he accelerated the rotor speed to 350rpm before depressing the takeoff button, and once the takeoff button was depressed, the gyroplane became airborne. Reportedly it reached an altitude of 2-3 feet, then settled back to the ground and entered ground resonance. The instructor said he was unable to maintain control, and that they were then "along for the ride."

Findings:
1. Loss of control-on ground/water Takeoff
Planning/decision <> Improper <> Pilot in command (CFI)

21-86. NTSB ID No. SEA90LA012
Date: 11/10/89
Aircraft make: McCulloch J-2
Damage: Substantial
Injuries: 2 persons, none

During a local instructional flight, the student pilot allowed the gyroplane's airspeed to get too low during a simulated emergency landing. As a result, the gyroplane's sink rate was too high. The flight instructor took over and attempted to increase power. However, sufficient airspeed was not attained before a hard landing was made.

Findings:
1. Hard landing: Landing-flare/touchdown
Proper descent rate <> Exceeded <> Dual student
Remedial action <> Delayed <> Pilot in command (CFI)

21-87. NTSB ID No. SEA90LA035
Date: 01/11/90
Aircraft make: Stanger Air Commander 532*
Damage: Destroyed
Injuries: 1 person, fatal

The pilot was conducting a sales demonstration flight in the uncertificated gyroplane, performing maneuvers at a low altitude. He made a low pass at 15 feet above the ground, and initiated a steep angle, maximum rate climb to approximately 50 feet. The aircraft spun to the right, rolled onto its side, descended vertically and impacted the ground. The unlicensed pilot had about 23 hours flight time.

Findings:
1. Loss of control-in flight: Maneuvering
Procedures/directives <> Not followed <> Pilot in command
Qualification <> Pilot in command
Pull-up <> Performed <> Pilot in command
Aircraft control <> Not maintained <> Pilot in command
Lack of total experience <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-88. NTSB ID No. CHI90DET02
Date: 01/22/90
Aircraft make: Aircraft Command 532*
Damage: Destroyed
Injuries: 1 person, fatal

The non-rated pilot was observed making several low altitude, low speed passes. The gyroplane was then observed making high bank turns and accelerating to speeds faster than the witnesses had seen a gyroplane fly before. After rolling

out of a turn and leveling off, the aircraft was observed to begin a series of up-and-down roller coaster-like maneuvers followed by a diving roll to impact. The pilot had a student pilot certificate and had received gyroplane instruction from two instructors. Neither instructor had certified the pilot for solo flight in a gyroplane.

Findings:
1. Loss of control-in flight: Maneuvering
   [Aircraft] handling <> Abrupt <> Pilot in command
   Ostentatious display <> Pilot in command
   Design stress limits of aircraft <> Exceeded <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-89. NTSB ID No. FTW90DRA03
Date: 02/17/90
Aircraft make: Air Command 447*
Damage: Destroyed
Injuries: 1 person, none

The pilot lost control of the aircraft shortly after taking off. It was the pilot's first flight in the aircraft after he had rebuilt it; however it had been test flown by another individual. The pilot had accumulated a total of 6.5 hours in gyroplanes and received an endorsement to his private pilot's license. Examination of the wreckage did not reveal any reason for the loss of control. Pilot witnesses, who were familiar with gyroplane operations, stated that the pilot lost control due to "improper pilot technique."

Findings:
1. Loss of control-in flight: Maneuvering
   Reason for occurrence undetermined <> No modifier specified <> No person specified
   Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-90. NTSB ID No. MIA90LA087
Date: 03/12/90
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 2 persons, none

The gyroplane pilot had just made a jump-takeoff and had only 20 knots when she saw wires ahead. She initiated a steep turn at low altitude and the gyroplane lost altitude. Subsequently, it touched down on uneven terrain and rolled over on its left side.

Findings:
1. In flight collision with terrain/water: Takeoff
   Planning/decision <> Improper <> Pilot in command
   Object <> Wire, static
   Maneuver <> Performed <> Pilot in command
   Airspeed <> Inadequate <> Pilot in command
   Descent <> Inadvertent <> Pilot in command
2. Roll over: Other

21-91. NTSB ID No. FTW90DQA01
Date: 04/07/90
Aircraft make: Air Command 532*
Damage: Substantial
Injuries: 1 person, fatal

During takeoff, the gyroplane was seen climbing in a steep attitude, followed by oscillations about the lateral axis. These excursions increased in severity and the rotor blade rpm deteriorated. After about three oscillations, the gyroplane rolled to the left and tumbled to the ground from an approximate height of 125 feet. Inspection of the wreckage revealed evidence of downward rotational flapping motion of the rotor blades. Corresponding impact marks showed that the rotor blades struck the tips of the propeller blades and the vertical stabilizer/rudder. The vertical stabilizer/rudder had separated in flight and was found about 75 feet from the main wreckage. The pilot was not rated in gyroplanes or rotorcraft; he had received two hours of dual instruction in a gyroplane over six months prior to the accident. He had not been endorsed for solo flight. Although the aircraft weight and speed placed it in the category of an aircraft, it was not registered.

Findings:

1. Loss of control-in flight: Takeoff-initial climb
   Procedures/directives <> Not followed <> Pilot in command
   Aircraft control <> Not maintained <> Pilot in command
   Rotor rpm <> Not maintained <> Pilot in command
   Qualification <> Pilot in command
   Inadequate training <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
2. Airframe/component/system failure/malfunction: Takeoff
   Vertical stabilizer surface <> Overload
   Vertical stabilizer surface <> Separation
3. In flight collision with terrain/water: Descent-uncontrolled

21-92. NTSB ID No. MIA90FA102
Date: 04/07/90
Aircraft make: Farrington Air Command 532*
Damage: Destroyed
Injuries: 1 person, fatal

Pilot had received only approximately one hour total gyrocopter flight time and approximately 15 minutes of dual instruction and had not been signed off for solo flight. Pilot had expired medical certificate and no record of having received a biennial flight review. Gyrocopter had no record of having current inspection. Pilot inadvertently let gyrocopter porpoise resulting in main rotor rpm slowing and main rotor blade contacting rotor head and propeller. All control was lost and the gyrocopter descended out of control, colliding with the ground. No post-crash evidence of failure of the structure, flight controls or engine.

Findings:
1. Loss of control-in flight: Maneuvering
   Overconfidence in personal ability <> Pilot in command
   Lack of total experience <> Pilot in command
   Lack of recent experience <> Pilot in command
   Rotorcraft flight controls <> Improper use of <> Pilot in command
   Rotor rpm <> Not maintained <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Open field

21-93. NTSB ID No. SEA90LA067
Date: 04/12/90
Aircraft make: Becker Bensen B-8M*
Damage: None
Injuries: 1 person, serious

The pilot was ground handling the aircraft for takeoff into the wind, with the engine running, when he inadvertently came in contact with the propeller.

Findings:
1. Propeller/rotor contact to person Standing-engine(s) operating
   Clearance <> Not maintained <> Pilot in command

21-94. NTSB ID No. MIA90LA115
Date: 05/02/90
Aircraft make: Air Command 532 Elite*
Damage: Substantial
Injuries: 1 person, none

During cruise flight about 500 feet offshore, the pilot reported that the engine coolant and oil temperature began rising. He attempted to land on the beach but was unable, and landed just offshore. After touchdown, the main rotor mast separated. Examination of the engine revealed that a liquid coolant line separated from the radiator, due to vibration. This allowed the coolant to drain. According to an FAA Inspector, there was no airworthiness certificate nor engine and aircraft logbooks. The pilot held a student pilot certificate but nor his pilot logbook was endorsed authorizing solo flight.

Findings:
1. Loss of engine power: Cruise-normal
   Cooling system, lines <> Vibration
   Aircraft preflight <> Poor <> Pilot in command
   Cooling system, lines <> Separation

Maintenance, inspection of aircraft <> Unavailable <> No person specified
Engine assembly <> Overtemperature
2. Forced landing: Descent-emergency
3. Ditching: Descent-emergency

21-95. NTSB ID No. ATL90DKG04
Date: 06/03/90
Aircraft make: Air Command 532*
Damage: Substantial
Injuries: 1 person, none

The pilot was demonstrating the capabilities of the home built gyrocopter. During a flat spiraling [turn] to a reasonable recovery altitude maneuver, the main rotor of the aircraft struck the ground. The pilot is a low time pilot with no helicopter experience. [?]

Findings:
1. In flight collision with terrain/water: Maneuvering
Terrain condition <> Ground
Maneuver <> Improper <> Pilot in command
Lack of total experience <> Pilot in command
Altitude <> Misjudged <> Pilot in command

21-96. NTSB ID No. FTW90DRA06
Date: 07/20/90
Aircraft make: Huffaker Bensen*
Damage: Substantial
Injuries: 1 person, minor

The pilot stated that shortly after takeoff, he turned downwind to make a low pass in front of the crowd and that during the pass he got "behind the power curve" and the aircraft impacted the ground. He further stated that even with full power applied he could not keep the aircraft from sinking and that there was "moderate to severe" turbulence in the area.

Findings:
1. Loss of control-in flight: Maneuvering
Aircraft performance, climb capability <> Exceeded
Low pass <> Performed <> Pilot in command
Weather condition <> Tailwind
Compensation for wind conditions <> Inadequate <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-97. NTSB ID No. FTW90DRA07
Date: 07/21/90
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, fatal

Several witnesses, all of which were gyrocopter pilots, stated that it appeared the pilot entered a pilot induced oscillation (PIO) during the initial climb and that he was unable to regain control. A video tape of the accident showed the aircraft enter a series of divergent nose up and nose down maneuvers, the first of which was a nose pitch up. The aircraft subsequently entered a steep descent, went inverted, and impacted the ground. No evidence of preimpact failure or malfunction was found. The pilot did not have a [gyroplane] rating and had accumulated a total of about 40 hours flight time in the make and model aircraft.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
Cyclic <> Excessive <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
Remedial action <> Abrupt <> Pilot in command
3. In flight collision with terrain/water: Descent-uncontrolled

21-98. NTSB ID No. FTW90FA170
Date: 08/29/90
Aircraft make: Air & Space 18A
Damage: Substantial

Injuries: 2 persons, none

THE pilot in command STATED THAT AT LIFTOFF A SEVERE LATERAL VIBRATION OCCURRED CAUSING LOSS OF CONTROL OF THE GYROPLANE. WITNESSES REPORTED AN ERRATIC PORPOISING PITCHING MOTION. THE AIRCRAFT CAME TO REST APPROXIMATELY 1,500 FEET AFTER CONTROL WAS LOST, WHICH WAS AT THE POINT OF ATTEMPTED LIFTOFF. AS A RESULT OF flAPPING, TWO OF THE THREE ROTOR BLADES CONTACTED THE PROPELLER AND RUDDER. ALTHOUGH NOT RECOMMENDED BY THE MANUFACTURER, THE FRONT SEAT WAS OCCUPIED BY A PILOT RATED PASSENGER WITH NO GYROPLANE EXPERIENCE. DURING SUBSEQUENT flIGHT TESTING, TAKEOFF WAS PERFOrMED UNDER SIMILAR CONDITIONS. IMPROPER TECHNIQUES DURING ATTEMPTED LIFTOFF RESULTED IN ErRATIC OSCILLATION AND ROTOR rpm DECAY. NO MECHANICAL MALFUNCTION WAS DISCOVERED.

Findings:
1. Loss of control-on ground/water: Takeoff
   Procedures/directives <> Not followed <> Pilot in command
   Lift-off <> Improper <> Pilot in command
2. In flight collision with terrain/water: Takeoff

21-99. NTSB ID No. FTW90DPA09
Date: 09/29/90
Aircraft make: WindRyder*
Damage: Substantial
Injuries: 1 person, minor

AT ABOUT 1000 FEET agl THE GYROPLANE OWNER/BUILDER/PILOT EXPERIENCED A TOTAL POWER LOSS. DURING THE EMERGENCY DESCENT TO THE FORCED LANDING THE AIRCRAFT CLEARED POWER LINES AND VEERED LEFT TO AVOID TREES. THE ROTOR BLADE STRUCK A TELEPHONE CABLE RESULTING IN AN UNCONTROLLED DESCEND TO GROUND IMPACT. INVESTIGATION REVEALED THAT THE SPADE LUG CONNECTED TO THE IGNITION DAMPING BOX DISCONNECTED DUE TO IMPROPER CRIMPING, CAUSING LOSS OF IGNITION.

Findings:
1. Loss of engine power (total)-mechanical failure/malfunction: Cruise-normal
   Ignition system <> Failure, total
   Maintenance, installation <> Improper <> Company/operator management
2. Forced landing: Descent-emergency
3. In flight collision with object: Descent-emergency
   Object <> Wire, transmission
4. Loss of control-in flight: Descent-emergency
5. In flight collision with terrain/water: Descent-uncontrolled

21-100. NTSB ID No. CHI91DEP03
Date: 01/15/91
Aircraft make: Air Command 503*
Damage: Destroyed
Injuries: 1 person, fatal

THE PILOT OF AN UNREGISTERED GYROCOPTER WAS MAKING TAKEOFFS AND LANDINGS IN CONDITIONS CONDUCIVE TO ICING. HE MADE A LANDING AND COMPLAINED OF ICE ON HIS GLASSES TO A WITNESS. WHEN NO GOGGLES COULD BE LOCATED HE STATED THAT HE WOULD MAKE ONE MORE TAKEOFF AND LANDING. ON THE DOWnWIND LEG OF THE flIGHT THE AIRCRAFT WAS OBSERVED BY WITNESSES TO DEPaRT CONTROLLED flIGHT, TUMBLE, AND IMPACT THE TERRAIN. WITNESSES STATED THAT DURING AN ATTEMPT TO REVIVE THE PILOT HE HAD AN ACCUMULATION OF ONE QUARTER INCH OF ICE OVER HIS EYES AND FACE.

Findings:
1. Abrupt maneuver: Approach-VFR pattern-downwind
   Rotorcraft flight controls <> Abrupt <> Pilot in command
   Rotor rpm <> Not maintained <> Pilot in command
   Weather condition <> Icing conditions
   Incapacitation (visual deficiency) <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-101. NTSB ID No. ATL91LA066
Date: 03/16/91
Aircraft make: Bensen B-8M*

Damage: Substantial
Injuries: 1 person, fatal

WITNESSES STATED THAT THE AIRCRAFT WAS flYING AT ABOUT 200 FEET agl WHEN THE GYROCOPTER'S MAIN ROTOR SEPARATED FROM THE AIRCRAFT. INVESTIGATION REVEALED THAT THE COmmERCIAL PILOT, WHO WAS NOT RATED IN GYROCOPTERS, HAD BUILT AND DID ALL THE maINTENANCE ON THE GYROCOPTER. FURTHER INVESTIGATION REVEALED THAT THE RETAINER WASHER WAS MISSING FROM THE MAIN ROTOR BEARING BLOCK ASSEMBLY.

Findings:
1. Airframe/component/system failure/malfunction: Cruise
   Rotor system <> Separation
   Maintenance, installation <> Improper <> Pilot in command
2. Loss of control-in flight: Cruise
3. In flight collision with terrain/water: Descent-uncontrolled

21-102. NTSB ID No. CHI91DEE03
Date: 03/24/91
Aircraft make: Air Command Gyrocopter*
Damage: Substantial
Injuries: 1 person, minor

THE GYROPLANE PILOT ENTERED A DESCENDING SPIRAL ABOUT 1000 FEET agl AND LANDED HARD IN AN OPEN, MUDDY FIELD. THE PILOT STATED HE FAILED TO RECOVER AT A SAFE ALTITUDE. ExaMINATION OF THE WRECKAGE SHOWED CONTROL CONTINUITY EXISTED.

Findings:
1. Miscellaneous/other: Maneuvering
   Spiral <> Initiated <> Pilot in command
   Descent <> Excessive <> Pilot in command
2. Hard landing: Descent
   Pull-up <> Delayed <> Pilot in command

21-103. NTSB ID No. LAX91LA217
Date: 05/16/91
Aircraft make: Farrington 18A
Damage: Substantial
Injuries: 1 person, none

THE CERTIfiCATED ATP PILOT STATED THAT HE HAD COMPLETED A NOrMAL CHECKLIST. HE STATED THERE WAS A NOrMAL SPIN UP ON THE RUNWAY AND ROTOR rpm WAS ATTAINED WITH NO SIGN OF GROUND RESONANCE. EVERYTHING WAS NORMAL ON TAKEOFF RUN TO 30 KNOTS. AT 31 KNOTS THE PILOT PROCEEDED TO PREPOSITION STICK TO THE LEFT AND PUSH LIFT BUTTON. THE AIRCRAFT ENCOUNTERED VIOLENT GROUND RESONANCE SIMULTANEOUSLY AT LIFT OFF. GYROPLANE CONTINUED SHAKING VIOLENTLY AND SWERVED TO THE LEFT COLLIDING WITH THE GROUND. THE PILOT STATED TO THE FAA HE WAS UNSURE WHETHER OR NOT HE HAD ACTUALLY PRESSED THE ENGAGE SWITCH OR THAT HE HAD BECOME AIRBORNE.

Findings:
1. Airframe/component/system failure/malfunction: Climb-to cruise
2. Roll over: Takeoff-roll/run
   Remedial action <> Not performed <> Pilot in command

21-104. NTSB ID No. MIA91LA185
Date: 07/13/91
Aircraft make: D.R. Lee Air Command*
Damage: Destroyed
Injuries: 1 person, fatal

WITNESSES STATED GYROCOPTER BEGAN UP AND DOWN MOTION OR PORPOISING SHORTLY AFTER TAKEOFF. THIS CONTINUED UNTIL AIRCRAFT ROLLED TO THE LEFT AND PITCHED DOWN AT WHICH TIME IT COLLIDED WITH THE GROUND. THE ENGINE CONTINUED TO OPERATE UNTIL GROUND IMPACT. POST-CRASH EXAMINATION OF THE AIRCRAFT BY FAA INSPECTORS REVEALED NO EVIDENCE OF FAILURE OR MALFUNCTION OF THE STRUCTURE, flIGHT CONTROLS, OR ENGINE. THE MAIN ROTOR BLADES HAD flEXED UP AND DOWN AND MaDE CONTACT WITH THE PROPELLER. AVAILABLE RECORDS INDICATED THE PILOT HAD APPROXIMATELY five

HOURS IN GYROCOPTERS WITH NO EVIDENCE OF HAVING RECEIVED ANY TRAINING IN GYROCOPTERS.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
   Flight controls <> Improper use of <> Pilot in command
   Inadequate initial training <> Pilot in command
   Porpoise <> Inadvertent <> Pilot in command
   Level off <> Not performed <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Ground

21-105. NTSB ID No. SEA91LA202
Date: 08/04/91
Aircraft make: Taylor Air Command*
Damage: Destroyed
Injuries: 1 person, fatal

THE AIRPLANE PILOT WAS ON HIS FIRST TAKEOFF IN THE HOMEBUILT GYROPLANE WHEN THE AIRCRAFT MANEUVERED ERRATICALLY, ROLLED INVERTED, DESCENDED UNCONTROLLED AND IMPACTED THE GROUND.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
   Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-106. NTSB ID: LAX91LA359
Date: 08/15/91
Aircraft make: Wentzel B-8MJ*
Damage: Substantial
Injuries: 1 fatal

The non helicopter [?] rated pilot was using an unapproved takeoff an landing area between hangars on the airport. Numerous maintenance and certification irregularities were found. The gyrocopter had not had an annually required condition inspection since 1986. Numerous ground witnesses reported that after the pilot completed the modifications, he made one aborted attempt to takeoff. The pilot was next seen to taxi the gyrocopter back to his hangar where he made some minor adjustments to the rotor system. The pilot then taxied the aircraft back to the original takeoff spot, spun up the rotor system and initiated another takeoff. The witnesses saw the machine lift off in a steeper than normal nose-high attitude, then the rotor blades began to wave erratically "like spaghetti." The gyrocopter hit the ground on its wheels and rolled into a pickup truck. The gyrocopter was examined by an FAA Airworthiness Inspector familiar with the machines. He reported that he found no identifiable preimpact malfunctions or f
ailures.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
   Flight controls <>Improper use of <> Pilot in command
   Rotation <> Excessive <> Pilot in command
   Aircraft control <> Not maintained <> Pilot in command
   Maintenance <> Poor <> Pilot in command
2. On ground/water collision with object: Landing-roll
   Aborted takeoff <> Attempted <> Pilot in command
   Object <> Vehicle

21-107. NTSB ID: LAX92LA006
Date: 10/05/91
Aircraft make: Bentley Mongoose*
Damage: Destroyed
Injuries: 2 persons, fatal

THE Pilot'S MEDical CERTificate WAS EXPIRED and HE DID NOT HOLD A ROTORCRAFT CATEGORY RATING. During AN EXAMination OF THE WRECKAGE, STRONG ROTATIONAL SIGNATURES WERE EVIDENT ON BOTH THE PROPeller and MAIN ROTOR BLADES. NO aircraft system ABNORMALITIES WERE found during THE EXAMination OF THE WRECKAGE. WHEEL TRACKS and IMPACT ground SCARS WERE found ON THE DRY LAKE BED SURFACE. THREE TIRE TRACKS MATCHING THE DIMENSIONAL GEOMETRY OF THE Landing GEAR WERE Found EXTENDING FOR A DISTANCE OF ABOUT 150 yards. AN ADDITIONAL 15 yards OF MAIN GEAR ONLY TRACKS WERE found, WHICH TERMINATED AT A BERM. Heavy GOUGE MARKS WERE NOTED ON THE TOP OF THE BERM, WHICH

MATCHED ALL three landing GEAR. ABOUT 105 yards BEYOND THE BERM, A ground IMPACT CRATER WAS OBSERVED, FOLLOWED BY A DISTURBANCE IN THE DIRT WHICH CULMINATED IN THE GYROCOPTER WRECKAGE. THE GYROCOPTER HAD NOT BEEN ISSUED AN AIRWORTHINESS CERTIFICATE IN ANY CATEGORY.

Findings:
1. On ground/water encounter with terrain/water: Takeoff-roll/run
   Terrain condition <> Berm
   Preflight planning/preparation <> Poor <> Pilot in command
   Unsuitable terrain or takeoff/landing/taxi area <> Selected <> Pilot in command

21-108. NTSB ID No. LAX92LAI09
Date: 02/04/92
Aircraft make: 85 Manista KB-2*
Damage: Destroyed
Injuries: 1 person, fatal

DURING A LOCAL AREA FLIGHT THE PILOT WAS OBSERVED CIRCLING OVER A RESIDENTIAL AREA AT A LOW ALTITUDE. THE PILOT INITIATED AN ABRUPT TURNING MANEUVER WHILE CHANGING THE EXPERIMENTAL GYROPLANE'S PITCH ATTITUDE. ROTOR rpm DECREASED AND THE BLADES BEGAN EXCESSIVELY flAPPING. THE BLADES COLLIDED WITH AND SEVERED THE RUDDER AND PROPELLER. THEREAFTER, THE GYROPLANE NOSED DOWN AND DESCENDED (UNCONTROLLED) INTO A CITY STREET.

Findings:
1. Abrupt maneuver: Maneuvering
   Maneuver <> Abrupt <> Pilot in command
   Maneuver <> Excessive <> Pilot in command
   Adequate rotor rpm <> Not maintained <> Pilot in command
2. Airframe/component/system failure/malfunction: Maneuvering
   Flight control, rudder <> Separation
   Propeller system/accessories, blade <> Separation
3. In flight collision with terrain/water Descent-uncontrolled

21-109. NTSB ID No. FTW92DPG01
Date: 03/08/92
Aircraft make: WindRyder*
Damage: Destroyed
Injuries: 1 person, fatal

DURING FINAL APPROACH, AT ABOUT 200 FeeT agl, THE GYROCOPTER WAS OBSERVED TO SUDDENLY ROLL LEFT INTO A 90* BANK AND IMPACT THE GROUND. EXAMINATION OF THE GYROCOPTER REVEALED NO ANOMALIES IN THE SYSTEMS OR EVIDENCE OF FAILED OR MALFUNCTIONING COMPONENTS.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-final approach
   Reason for occurrence undetermined <> No modifier specified <> No person specified
2. In flight collision with terrain/water: Approach-VFR pattern-final approach

21-110. NTSB ID No. LAX92LA218
Date: 05/24/92
Aircraft make: Willis Homebuilt Gyrocopter*
Damage: Destroyed
Injuries: 1 person, fatal

THE HOMEBUILT GYROCOPTER WAS OBSERVED BY witnesses TO ENTER A STEEP LOW LEVEL TURN OVER THE EL MIRAGE DRY LAKE AFTER MEETING AN APPROACHING MOTOR VEHICLE. THE WITNESS STATED THAT THE GYROCOPTER NOSED INTO THE DRY LAKE BED WHILE IN THE TURN. THE PILOT HAD BUILT THE GYROCOPTER FROM SALVAGE PARTS. HE HAD BEEN FLYING GYROCOPTERS SINCE HE WAS 15 YEARS OLD. HE HAD NOT RECEIVED FORMAL FLIGHT TRAINING IN THE AIRCRAFT. THE PILOT'S TOXICOLOGICAL EXAMINATION SHOWED 5.12 MG/L METHAMPHETAMINE AND 0.47 MG/L AMPHETAMINE IN THE HEART BLOOD.

Findings:
1. Loss of control-in flight: Maneuvering
   Reason for occurrence undetermined <> No modifier specified <> No person specified
   Impairment (drugs) <> Pilot in command
   Inadequate training <> Pilot in command

2. In flight collision with terrain/water: Maneuvering

21-111. NTSB ID No. CHI92DCD05
Date: 05/31/92
Aircraft make: Rutter 532 Commander*
Damage: Destroyed
Injuries: 1 person, fatal

WITNESSES TO THE ACCIDENT SAW THE GYROCOPTER PORPOISE SEVERAL TIMES DURING INITIAL CLIMB. THEY SAW THE AIRCRAFT BANK STEEPLY TO THE LEFT UNTIL IT BECAME INVERTED THEN DESCEND INTO THE GROUND. ONE WITNESS WHO ASSISTED THE PILOT IN STARTING THE AIRCRAFT NOTED THE PILOT APPEARED TO BE NERVOUS BEFORE THE FLIGHT. HE ALSO NOTED THE TAKEOFF RUN SEEMED UNUSUALLY LONG. POST-ACCIDENT EXAMINATION OF THE WRECKAGE SHOWED THE FLIGHT CONTROL CABLES AND HARDWARE TO BE INTACT. NO MECHANICAL DEFECTS WERE DISCOVERED IN THE AIRFRAME OR POWERPLANT.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
Aircraft control <> Not maintained <> Pilot in command
Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
Terrain condition <> Ground

21-112. NTSB ID No. NYC92LA179
Date: 08/19/92
Aircraft make: Bensen-Callaway B-80*
Damage: Substantial
Injuries: 2 persons, none

THE PILOT MADE A FORCED LANDING IN A CORN FIELD. THE PILOT SAID, "FUEL STARVATION DUE TO CONTAMINATION IN FUEL LINES-POWER LOSS-LANDED IN 12 feet TALL CORN FIELD." THE FAA DID NOT RECEIVE NOTIFICATION OF THE ACCIDENT UNTIL SEVEN DAYS AFTER THE OCCURRENCE. WHEN THE FAA INSPECTORS ARRIVED AT THE AIRPORT WHERE THE WRECKAGE WAS LOCATED, THE GYROPLANE WAS BEING REBUILT AND NO DETERMINATION OF THE ENGINE FAILURE WAS POSSIBLE.

Findings:
1. Loss of engine power: Cruise
Reason for occurrence undetermined <> No modifier specified <> No person specified
2. Forced landing: Descent-emergency
3. In flight collision with terrain/water: Landing
Terrain condition <> High vegetation

21-113. NTSB ID No. FTW92DQG02
Date: 08/29/92
Aircraft make: Woodstock Air Command 532*
Damage: Destroyed
Injuries: 1 person, fatal

A PRIVATE PILOT WAS FLYING HIS RECENTLY PURCHASED GYROCOPTER IN THE TRAFFIC PATTERN. A WITNESS REPORTED HEARING A POWER REDUCTION WHILE THE GYROCOPTER WAS ON A HIGH DOWNWIND. AIRSPEED WAS NOT MAINTAINED AND THE ROTOR rpm DECAYED [?] TO THE POINT WHERE THE NOSE PITCHED DOWN AS THE GYROCOPTER ROLLED TO THE LEFT IN AN UNCONTROLLED DESCENT TO THE GROUND. DENSITY ALTITUDE WAS 6600 FEET.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-downwind
Airspeed <> Not maintained <> Pilot in command
Stall {?} <> Inadvertent <> Pilot in command
Weather condition <> High density altitude
2. In flight collision with terrain/water: Descent-uncontrolled
Terrain condition <> Open field
Weather condition <> High density altitude

21-114. NTSB ID No. ATL92LA177
Date: 09/04/92
Aircraft make: Air Command Commander*

Damage: Substantial
Injuries: 1 person, none

THE PILOT STATED THAT HE WAS ATTEMPTING TO TAKE OFF FROM A ROUGH, SOD, PRIVATE AIRSTRIP. BECAUSE OF THE ROUGHNESS, HE ATTEMPTED TO ROTATE PREMATURELY, BEFORE SUFfiCIENT ROTOR SPEED HAD BEEN ATTAINED TO SUPPORT FLIGHT.

Findings:
1. Miscellaneous/other: Takeoff-roll/run
2. Loss of control-on ground/water: Takeoff-roll/run
   Adequate rotor rpm <> Not attained <> Pilot in command
   Airport facilities, runway/landing area condition <> Rough/uneven
   Airspeed (Vr) <> Premature <> Pilot in command

21-115. NTSB ID No. LAX92LA408
Date: 09/26/92
Aircraft make: Air Command*
Damage: Substantial
Injuries: 2 persons, fatal

FAA RECORDS REVEALED THAT NEITHER THE PILOT NOR THE PASSENGER HAD EVER HELD AN AIRMAN OR MEDICAL CERTIFICATE. THE EXPERIMENTAL GYROCOPTER WAS UNLICENSED AND UNREGISTERED. THE PILOT BOUGHT THE AIRCRAFT 20 DAYS PRIOR TO THE ACCIDENT AND WAS GIVEN TWO HOURS OF INSTRUCTION BY THE DEALER. AT THE TIME OF THE ACCIDENT HE WAS ESTIMATED TO HAVE flOWN A TOTAL OF aBOUT five HOURS. ON THE DAY OF THE ACCIDENT THE PILOT AND HIS PASSENGER flEW EARLIER IN THE MORNING TO PRACTICE TOUCH AND GO LANDINGS. ON THE ACCIDENT flIGHT THEY REPORTEDLY WERE TO CONTINUE THE TOUCH AND GO PATTERN PRACTICE AND TWO SUCCESSFUL TOUCH AND GOS WERE PERFOrMED. ON THE THIRD APPROACH WHILE ON FINAL WITNESSES SAW THE AIRCRAFT SUDDENLY PITCH NOSE DOWN AND DIVE TO GROUND IMPACT ABOUT 100 YARDS FROM THE END OF THE RUNWAY. THE WITNESSES REPORTED HEARING STRONG ENGINE SOUNDS DURING THE fiNAL DESCENT TO IMPACT. RESPONDING SHERIFF'S OFFICERS REPORTED DETECTING A STRONG ODOR OF FUEL IN THE IMMEDIATE VICINITY OF THE WRECKAGE AND FOUND THE FUEL TANK COMPROMI
SED. THE DEPUTY NOTED THAT HE EXAMINED THE ENGINE AREA AND OBSERVED "NOTHING REMARKABLE." THE MAIN ROTOR BLADES AND THE ENGINE PROPELLER WERE PRESENT AT THE IMPACT SITE.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-final approach
   Aircraft control <> Not maintained <> Unqualified person
   Qualification <> Pilot in command
   Lack of total experience <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-116. NTSB ID No. DEN93LA003
Date: 10/10/92
Aircraft make: O'Connor Sno-Bird XL*
Damage: Substantial
Injuries: 1 person, serious

THE PILOT WAS DEMONSTRATING VARIOUS MANEUVERS IN HIS GYROCOPTER AT AN AIR SHOW. HE ENTERED A LEFT VERTICAL [turning descent] AND NOTED THE ENTRY WAS SLUGGISH. WHEN HE ADDED POWER TO AID IN [turN] DEVELOPMENT, THE RUDDER JAMMED FULL LEFT. EFFORTS TO RECOVER WERE TO NO AVAIL AND THE GYROCOPTER IMPACTED TERraIN NEXT TO THE AIRPORT RUNWAY. POSTACCIDENT EXAMINATION DISCLOSED THE LEADING EDGE OF THE fiBERGLASS RUDDER HAD DELAMINATED AND HAD JAMMED THE RUDDER IN THE FULL LEFT POSITION.

Findings:
1. Loss of control-in flight: Maneuvering
   Flight control, rudder surface <> Delamination
   Flight control, rudder <> Jammed
2. In flight collision with terrain/water: Descent-uncontrolled

21-117. NTSB ID No. ATL93LA007
Date: 10/10/92
Aircraft make: Bensen B-8M*
Damage: Substantial

Injuries: 1 person, fatal

ACCORDING TO THE PILOT'S FATHER, THE PURPOSE OF THE OPERATION WAS TO TEST AND BECOME FAMILIAR WITH THE GYROCOPTER'S FLIGHT CHARACTERISTICS AFTER THE MAIN ROTOR SYSTEM WAS INSTALLED. THE PILOT'S FATHER FOLLOWED THE AIRCRAFT ON THE LONG RUNWAY AND OBSERVED THE GROUND TEST AS THE PILOT MADE SEVERAL TOUCH AND GO TYPE MANEUVERS. AS HE APPROACHED THE END OF THE RUNWAY, THE PILOT ELECTED TO CONTINUE, AND THE AIRCRAFT BECAME AIRBORNE. THE AIRCRAFT INITIALLY CLIMBED OVER THE TREE LINE ON THE DEPARTURE END OF THE RUNWAY AND WAS LAST SEEN DESCENDING BELOW THE TREE TOPS. THE WRECKAGE EXAMINATION FAILED TO DISCLOSE A MECHANICAL PROBLEM WITH THE AIRCRAFT. THE PILOT HAD 917 HOURS OF HELICOPTER FLIGHT TIME, BUT THERE WAS NO RECORD OF GYROCOPTER FLIGHT TIME.

Findings:
1. Loss of control-in flight: Climb
   Rotorcraft flight controls <> Improper use of <> Pilot in command

2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Ground

21-118. NTSB ID No. MIA93LA056
Date: 01/28/93
Aircraft make: Ferran Dominator-Big One*
Damage: Destroyed
Injuries: 1 person, fatal

THE PILOT WAS FLYING AN EXPERIMENTAL HOMEBUILT GYROPLANE IN THE DESIGNATED FLIGHT TEST AREA. WITNESSES HEARD A LOUD NOISE AND HEARD THE [aircraft] CRASH. NO EYEWITNESSES WERE LOCATED. THE GYROPLANE WAS ALMOST CONSUMED BY FIRE AND NO DETErMINATION OF PREEXISTING FAILURES COULD BE MADE.

Findings:
1. In flight collision with terrain/water: Descent
   Reason for occurrence undetermined <> No modifier specified <> No person specified

21-119. NTSB ID No. FTW93FA138
Date: 04/24/93
Aircraft make: Snobird 532*
Damage: Destroyed
Injuries: 1 person, fatal

A STUDENT PILOT LOST CONTROL OF HIS HOMEBUILT GYROPLANE ON ITS MAIDEN FLIGHT. DUE TO THE LOW CEILINGS AND HIGH WINDS, THE PILOT ELECTED TO RESTRICT HIS MORNING TraINING SESSION TO GROUND RUNS AND SHORT HOPS OVER THE RUNWAY. DURING THE fiFTH LOW FLIGHT, THE GYROPLANE WAS OBSERVED HIGHER OVER THE GROUND THAN ON ANY OF HIS PREVIOUS RUNS, AND AS THE AIRCRAFT APPROACHED THE END OF THE RUNWAY, FULL POWER WAS HEARD BEING APPLIED AND A STEEP CLIMB ESTABLISHED. WITNESSES REPORTED THAT AFTER TURNING DOWNWIND, WHILE STILL OPERATING AT FULL TAKEOFF POWER, A PROGRESSIVE PORPOISING LIKE OSCILLATION DEVELOPED FOLLOWED BY A LOSS OF CONTROL. THE GYROPLANE WAS OBSERVED DESCENDING RAPIDLY TUMBLING END OVER END UNTIL IT DISAPPEARED BEHIND A TREE LINE. THE TRIM SPRING USED TO PROVIDE SENSITIVITY AND STABILITY TO THE ROTOR SYSTEM WAS FOUND OUT OF ADJUSTMENT.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-downwind
   Weather condition <> High wind
   Weather condition <> Turbulence
   Rotorcraft flight control, mixing unit <> Other
   Maintenance,adjustment <> Improper <> Unknown
   Porpoise <> Inadvertent <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-120. NTSB ID No. NYC93LA096
Date: 04/27/93
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 2 persons, none

THE INSTRUCTOR WAS CONDUCTING A COMMERCIAL PILOT FLIGHT CHECK IN THE GYROPLANE. THE MANEUVER INVOLVED IN THE ACCIDENT WAS AN ABORT AFTER "LIFTOFF AT LOW AIRSPEED AND HIGH ANGLE OF ATTACK." THE INSTRUCTOR PILOT SAID, "A LIFTOFF WAS EXECUTED AT TOO LOW [AN] AIRSPEED, THE ABORT WAS DELAYED BECAUSE RUNWAY ALIGNMENT WAS LOST, AND THE NOSE STRUT GAVE WAY AFTER SOFT DIRT WAS ENCOUNTERED AFTER LEAVING THE ASPHALT." THE GYROPLANE ROLLED OVER ON THE SIDE.

Findings:

1. Loss of control-in flight: Takeoff-aborted
   Emergency procedure <> Initiated <> Pilot in command (CFI)
   Supervision <> Inadequate <> Pilot in command (CFI)
   Directional control <> Not maintained <> Dual student
2. Roll over: Landing-flare/touchdown
   Terrain condition <> Soft

21-121. NTSB ID No. BFO93LA068
Date: 05/02/93
Aircraft make: Leveck Vancraft*
Damage: Substantial
Injuries: 1 person, fatal

WITNESSES STATED THAT THEY SAW THE GYROPLANE TAKE OFF AND REACH AN ALTITUDE OF ABOUT 100 FEET agl. THEY SAID THAT THE GYROPLANE TRAVELED NORTH AND THEN TURNED STEEPLY TO THE WEST. THEY STATED THAT SHORTLY AFTER THE TURN WAS INITIATED, THE GYROPLANE FELL STRAIGHT DOWN TO THE GROUND. THE WITNESSES SAID THAT THEY HEARD THE ENGINE SPUTTER AND THE MAIN ROTOR BLADES WERE MOVING "SLOWLY" AROUND DURING THE DESCENT. THE POST ACCIDENT INVESTIGATION DID NOT REVEAL ANY AIRFRAME OR ENGINE ANOMALIES. A FRIEND OF THE PILOT STATED THAT THIS WAS THE PILOT'S FIRST FLIGHT IN THE GYROPLANE AFTER HE ADDED A "BODY ENCLOSURE" TO IT. THE PILOT HELD AN FAA sTUDENT PILOT CERTIFICATE.

Findings:

1. Loss of control-in flight: Cruise
   Rotor rpm <> Not maintained <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-122. NTSB ID No. FTW93LA152
Date: 05/12/93
Aircraft make: Elliott B-80*
Damage: Destroyed
Injuries: 1 person, none

DURING A DEPARTURE FROM A LOCAL AIRfiELD THE ENGINE LOST POWER AND THE PILOT EXECUTED A FORCED LANDING. DURING THE FORCED LANDING THE PILOT ATTEMPTED TO RETURN TO THE RUNWAY ENVIRONMENT. THE PILOT POSITIONED THE AIRCRAFT FOR LANDING WITH A 22 KNOT TAILWIND THAT WAS GUSTING TO 28 KNOTS. DURING THE POST ACCIDENT INVESTIGATION THE THROTTLE CABLE WAS FOUND TO HAVE FAILED AT THE THROTTLE Arm. THE FAILED CABLE CAUSED THE ENGINE TO GO TO AN IDLE CONDITION.

Findings:

1. Loss of engine power (partial)-mechanical failure/malfunction: Takeoff
   Throttle/power lever, cable <> Failure, total
2. Forced landing: Descent-emergency
3. In flight collision with terrain/water: Landing-flare/touchdown
   Weather condition <> Tailwind

21-123. NTSB ID No. BFO93LA106
Date: 07/04/93
Aircraft make: Wernega Bensen KB-2*
Damage: Destroyed
Injuries: 1 person, fatal

PILOT WITNESSES OBSERVED THE GYROPLANE TAKE OFF, flY A CIRCUIT AROUND THE AIRPORT, AND THEN PERFOrM A LOW PASS OVER THE RUNWAY. IT WAS THEN OBSERVED TO CLIMB UP TO ABOUT 200 FeeT, THEN

ABRUPTLY LEVEL OFF. THE ROTOR BLADE STRUCK THE RUDDER, AND THE GYROPLANE DESCENDED AND IMPACTED THE TERRAIN.

Findings:

1. Airframe/component/system failure/malfunction: Maneuvering
   Low pass <> Performed <> Pilot in command
   Rotorcraft flight controls <> Improper use of <> Pilot in command
   Flight control, rudder <> Separation
2. In flight collision with terrain/water: Descent-uncontrolled

21-124. NTSB ID No. MIA93LA172
Date: 08/07/93
Aircraft make: Sanford W. Love Dominator*
Damage: Substantial
Injuries: 1 person, none

The pilot stated he was flying northbound at 200-300 feet, at 50mph with a 25-30 knots southeasterly wind. This was 5-10[mph] slower than his normal cruise speed. HE MADE A TURN TO THE NORTHWEST WHICH PLACED THE GYROCOPTER DOWNWIND. AS HE COMPLETED THE TURN THE GYROCOPTER BEGAN TO DESCEND RAPIDLY. BEFORE RECOVERY COULD BE MADE THE MAIN ROTOR CONTACTED A PALM TREE AND THE GYROCOPTER IMPACTED THE GROUND. THE GYROCOPTER THEN ROLLED ON TO THE RIGHT SIDE AND CAME TO REST. ROTOR rpm WAS NOT MAINTAINED DURING THE TURN WHICH RESULTED IN THE RAPID DESCENT.

Findings:

1. Loss of control-in flight: Maneuvering-turn to reverse direction
   Rotor rpm <> Not maintained <> Pilot in command
2. In flight collision with object: Descent-uncontrolled
   Object <> Tree(s)
3. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Ground
4. Roll over: Other

21-125. NTSB ID No. BFO93LA149
Date: 09/02/93
Aircraft make: Lach Bensen B-8M*
Damage: Substantial
Injuries: 1 person, serious

AS THE PILOT WAS FLARING TO LAND, THE ROTOR CONTROL ARM (CONTROL STICK) FAILED AT A LOCATION JUST ABOVE THE PILOT'S HEAD. THE GYROCOPTER THEN ROLLED OVER AND CRASHED. A METALLURGICAL EXAMINATION REVEALED THE CONTROL ARM HAD FAILED FROM FATIGUE. THE FATIGUE ORIGINATED WHERE THE CONTROL ArM HAD BEEN CHAFED BY A LOOSE CLAMP.

Findings:

1. Airframe/component/system failure/malfunction: Landing-flare/touchdown
   Maintenance, inspection of aircraft <> Inadequate <> Company/operator management
   Rotorcraft flight control <> Loose
   Rotorcraft flight control <> Chafed
   Rotorcraft flight control <> Fatigue
2. Loss of control-in flight: Landing-flare/touchdown
3. In flight collision with terrain/water: Landing

21-126. NTSB ID No. FTW93LA272
Date: 09/03/93
Aircraft make: Coen Bensen B-8*
Damage: Destroyed
Injury: 1 person, fatal

THE AIRCRAFT WAS SEEN FLYING BETWEEN 300 AND 400 FEET ABOVE THE GROUND WHEN, ACCORDING TO A WITNESS, IT SUDDENLY "ROLLED RIGHT, NEARLY INVERTED, AND DESCENDED APPROXIMATELY 80* NOSE DOWN." SEVERAL DEEP GOUGES AND A SCRAPE MARK WERE NOTED ATOP THE ENGINE CRANKCASE, DIRECTLY BENEATH THE CENTER ENGINE MOUNTING BOLT. THE ENGINE MOUNT WAS FRACTURED. THIS FRACTURE, ACCORDING TO A METALLURGIST, WAS DUE TO FATIGUE. THE REMAINING FRACTURES WERE DUE TO OVERLOAD. THERE WAS NO EVIDENCE OF FLIGHT CONTROL MALFUNCTION OR FAILURE.

Findings:

1. Loss of control-in flight: Cruise-normal
   Engine assembly, mount <> Failure, total
   Engine assembly, mount <> Fatigue
   Aircraft control <> Not possible <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled
   Terrain condition <> Open field

21-127. NTSB ID No. FTW93LA256
Date: 09/04/93
Aircraft make: Jones Dominator*
Damage: Substantial
Injuries: 1 person, none

WHILE IN A LEFT BANK AND JUST PAST THE DEPARTURE END OF THE RUNWAY THE ENGINE STOPPED AND THE PILOT HAD TO laND THE gyroPLANE STRAIGHT AHEAD IN TALL WEEDS AND BRIARS. THE gyroPLANE CAME TO REST ON ITS LEFT SIDE. THE PILOT REPORTED THAT HE HAD TWO PREVIOUS ENGINE FAILURES AND HAD CHANGED THE FUEL PUMP, THE PULSE LINE, AND THE FUEL LINE. AN ENGINE EXAMINATION DID NOT REVEAL ANY ANOMALIES THAT WOULD HAvE CONTRIBUTED TO THE POWER LOSS. THIS WAS THE FIRST FLIGHT AFTER THE ENGINE WORK.

Findings:
1. Loss of engine power: Takeoff-initial climb
   Reason for occurrence undetermined <> No modifier specified <> No person specified
2. Forced landing: Descent-emergency
3. On ground/water encounter with terrain/water: Landing-roll
   Terrain condition <> None suitable
   Terrain condition <> High vegetation

21-128. NTSB ID No. SEA94LA026
Date: 11/06/93
Aircraft make: Bird RAF-2000*
Damage: Destroyed
Injuries: 1 person, fatal

WHILE EXECUTING TOUCH AND GO LANDINGS ON RUNWAY 20 AT THE SALINA-GUNNISON AIRPORT THE LOW TIME PILOT FREQUENTLY DIVERGED FROM THE RUNWAY'S CENTERLINE AND PASSED OVERHEAD HIS FATHER, WIFE AND A THIRD WITNESS, SITUATED BEYOND THE EDGE OF THE RUNWAY. FOLLOWING THE SEVENTH SUCH OVERFLIGHT THE GYROPLANE BEGAN A TRANSITION FROM HORIZONTAL TO VERTICAL FLIGHT, REACHING AN ALTITUDE OF 200-250 FEET agl, AND THEN DESCENDED RAPIDLY TO THE GROUND. THE FATHER, WHO WAS VIDEOTAPING THE GYROPLANE, DESCRIBED THE MANEUVER AS "LIKE A HAMMERHEAD STALL." WRECKAGE EXAMINATION BY FAA PERSONNEL REVEALED NO EVIDENCE OF MECHANICAL MALFUNCTION.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
   Proper climb rate <> Exceeded <> Pilot in command
   Stall [?] <> Inadvertent <> Pilot in command
   Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-129. NTSB ID No. ATL94LA013
Date: 11/10/93
Aircraft make: Bowermaster B-8M*
Damage: Substantial
Injuries: 1 person, serious

ON FINAL APPROACH, THE GYROPLANE LOST POWER AND THE PILOT FORCE LANDED THE AIRCRAFT IN TREES SHORT OF THE LANDING AREA. EXAMINATION OF THE WRECKAGE REVEALED NO EVIDENCE OF MECHANICAL FAILURE. FUEL WAS FOUND IN THE TANK AND FUEL SYSTEM AFTER THE ACCIDENT. THE OWNER OF THE AIRCRAFT STATED THAT THE TANKS WERE SUSCEPTIBLE TO FUEL SLOSHING AND THAT THIS MAY CAUSE FUEL STARVATION.

Findings:
1. Loss of engine power (total)-non-mechanical: Approach
   Fluid, fuel <> Starvation

Fuel system, tank <> Inadequate
Aircraft/equipment inadequate <> Production/design personnel
2. Forced landing: Descent-emergency
3. In flight collision with object: Descent-emergency
Object <> Tree(s)
4. In flight collision with terrain/water: Descent-emergency

21-130. NTSB ID No. ATL94LA039
Date: 01/16/94
Aircraft make: Air & Space 18A
Damage: Substantial
Injuries: 1 person, none

Narrative may contain preliminary analysis information-investigation incomplete.

Findings:
1. Airframe/component/system failure/malfunction: Maneuvering
2. Forced landing: Descent-emergency
3. In flight collision with terrain/water: Descent-emergency

21-131. NTSB ID No. MIA94LA086
Date: 03/06/94
Aircraft make: Parsons BP Gyro*
Damage: Substantial
Injuries: 2 persons, minor

The pilot was on the second supervised solo in a gyrocopter. His instructor pilot observed the gyrocopter high and fast on final approach. The gyrocopter then pitched up, the engine rpm increased, and the gyrocopter then began porpoising. The instructor then observed the rotor blades cone upward and the rotor rpm decreased. The aircraft then flipped inverted and crashed.

Findings:
1. Loss of control-in flight: Approach-VFR pattern-final approach
Rotor rpm <> Not maintained <> Pilot in command
Lack of total experience in type of aircraft <> Pilot in command
2. In flight collision with terrain/water: Descent-uncontrolled

21-132. NTSB ID No. MIA94LA126
Date: 04/24/94
Aircraft make: Pecchio Marchetti 263MP*
Damage: Destroyed
Injuries: 1 person, fatal

No narrative entered for this accident.

Findings:
1. In flight collision with object: Unknown

21-133. NTSB ID No. LAX94LA246
Date: 06/11/94
Aircraft make: McCulloch J-2
Damage: Destroyed
Injuries: 1 person, fatal

Narrative may contain preliminary analysis information-investigation incomplete.

Findings:
1. Loss of engine power: Takeoff-initial climb
2. Forced landing: Descent-emergency
3. In flight collision with terrain/water: Descent-emergency

21-134. NTSB ID No. BFO94LA097
Date: 06/12/94
Aircraft make: Falen Commander 503*
Damage: Destroyed

Injuries: 1 person, fatal

The unregistered home-built gyroplane was entering a right base leg for landing when it was observed to suddenly enter an uncontrolled descent and impact terrain. One witness stated that the engine was running at impact. Other witnesses were interviewed and none indicated an engine malfunction. Fuel was found in the carburetors. An examination of the wreckage did not reveal any evidence of preimpact mechanical deficiences. The pilot had never held an FAA airman certificate. His personal logbook indicated that he had flown about eight hours in the gyroplane.

Findings:
1. In flight collision with terrain/water: Descent-uncontrolled
   Reason for occurrence undetermined <> No modifier specified <> No person specified

21-135. NTSB ID No. CHI94DEV01
Date: 07/05/94
Aircraft make: Hucke Parson 2-P*
Damage: Substantial
Injuries: 1 person, minor

The pilot reported that after reaching an altitude of 100 feet, he turned right to avoid going over highway I-34 and the city of Monmouth, Illinois. The aircraft began losing altitude, with no power loss. He found a clear area along the runway. Upon landing, the right wheel struck a hole, causing the aircraft to shake violently. The aircraft came to rest on its right side, sustaining substantial damage.

Findings:
1. Loss of control-in flight: Takeoff-initial climb
   Airspeed <> Not maintained <> Pilot in command
   Stall [?]/mush <> Inadvertent <> Pilot in command
2. On ground/water encounter with terrain/water: Landing-roll
   Terrain condition <> Rough/uneven

21-136. NTSB ID No. NYC94LA130A
Date: 07/18/94
Aircraft make: Alderfer EAA-3*
Damage: Substantial
Injuries: 1 person, fatal; 1 person, none

No narrative entered for this accident.

Findings:
1. Midair collision: Approach-VFR pattern-final approach

21-137. NTSB ID No. CHI94LA274
Date: 08/09/94
Aircraft make: Nelson Bensen B-8M
Damage: Destroyed
Injuries: 1 person, fatal

Narrative may contain preliminary analysis information-investigation incomplete.

Findings:
1. Loss of control-in flight: Climb
2. In flight collision with terrain/water: Descent-uncontrolled

21-138. NTSB ID No. FTW95LA031
Date: 10/21/94
Aircraft make: Herron Little Wing Autogyro*
Damage: Substantial
Injuries: 1 person, none

No narrative entered for this accident.

Findings:
1. Loss of control-on ground/water: Landing-roll
2. Roll over: Landing-roll

21-139. NTSB ID No. LAX95LA047
Date: 12/10/94
Aircraft make: Bensen B-8M*
Damage: Destroyed
Injuries: 1 person, serious

No narrative entered for this accident.
Findings:
1. Loss of control-in flight: Takeoff
2. In flight collision with object: Descent-uncontrolled
3. In flight collision with terrain/water: Descent-uncontrolled

21-140. Summary

>From the 137 NTSB accident reports listed above, the following statistics emerge:

a. Fatal Injuries: 74 fatal injuries (54% of total) occurred in experimental gyroplanes, 2 fatal injuries (1% of total) occurred in certificated gyroplanes.

b. Serious Injuries: 21 serious injuries (15% of total) occurred in experimental gyroplanes; 2 serious injuries (1% of total) occurred in certificated gyroplanes.

c. Minor Injuries: 13 minor injuries (9% of total) occurred in experimental gyroplanes; 5 minor injuries (4% of total) occurred in certificated gyroplanes.

d. No Injuries: 27 no-injury accidents (20% of total) occurred in experimental gyroplanes; 19 no-injury accidents (14% of total) occurred in certificated gyroplanes.

e. The vast majority of gyroplane accidents occur in experimental gyroplanes operated by untrained, unlicensed pilots. A large number of the accidents in experimental gyroplanes occur when the aircraft starts to porpoise, which invariably leads to loss of control and a fatal crash. This caused 35 of the 74 (47%) fatalities in experimental gyroplanes. Porpoising indicates inadequate pitch stability of the gyroplane; inability to arrest it indicates a combination of deficient aircraft control and untrained pilots. The only two fatalities connected with a certificated gyroplane occurred because that gyroplane was operating with a rotor thrust bearing that had exceeded its life-limit. This accident could have been avoided by following the FAA-approved maintenance manual requirements for replacement of life-limited components.

f. Gyroplanes, especially experimental gyroplanes, are often regarded as not requiring training in order to fly safely. This attitude has been around since the first successful autogiro flew in 1923-and unfortunately promoted by various interests since that time. This arises primarily because the gyroplane cannot stall and is therefore presumed safe; however, loss of control of experimental gyroplanes accounts for a large number of fatalities. The accident reports included here overwhelmingly show that the gyroplane is an aircraft like any other-it is safe when designed to standard airworthiness criteria and flown by trained, licensed pilots.

g. An accident in an experimental gyroplane flown by an untrained, unlicensed pilot has a 54% chance of being fatal. Porpoising causes 47% of all fatal accidents.