AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9426		
Aircraft Registration	ZU-DVB	**Date of Accident**	25 March 2015		**Time of Accident**	1137Z	
Type of Aircraft	Gyrocopter RAF 2000 GTX SE FI		**Type of Operation**		Private Part 94		
Pilot-in-command Licence Type		NPL	**Age**	49	**Licence Valid**	Yes	
Pilot-in-command Flying Experience		Total Flying Hours	358.5		Hours on Type	354.3	
Last point of departure	Uitenhage (FAUH) aerodrome: Eastern Cape province						
Next point of intended landing	Uitenhage (FAUH) aerodrome: Eastern Cape province						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
In a bushy terrain outside the aerodrome							
Meteorological Information	Wind direction: 230°; Wind speed: 13kt; Air Temperature: 26°C; Dew point: 18°C; Clouds coverage: SCT; Cloud base: 020ft						
Number of people on board	1+1	**No. of people injured**	0	**No. of people killed**	2		

Synopsis

The pilot, accompanied by a passenger, was engaged on a private flight at the time when the accident occurred. According to the eyewitness who was standing in front of his hangar at the airfield, watching the aircraft from take-off, which was uneventful, until the time of the accident. However, a moment after a left turn into downwind, three loud-sounding bangs were heard in the direction of the aircraft, which was then observed to be losing height and to crash into the bushy terrain. Moments later, heavy smoke was observed in the direction where the aircraft was last seen disappearing.

Most of the aircraft structure was engulfed in the fire that erupted post the accident. All occupants were fatally injured.

The investigation revealed that the aircraft accident was due to rotor contact with the propeller during flight.

Probable Cause

The aircraft crashed following a left hand turn whereby the rotor impacted the propeller, the tail stabilizer and resulting in stoppage of rotor and an engine causing the aircraft to loose lift completely and fall from the sky. The pilot also disregarded the standard safety oversight.

SRP Date	21 February 2017	Release Date	04 April 2017

AIRCRAFT ACCIDENT REPORT

Name of Owner	**:** Foster W. K
Name of Operator	**:** Foster W. K
Manufacturer	**:** Rotary Air Force
Model	**:** RAF 2000 GTX SE FI
Nationality	**:** South African
Registration Marks	**:** ZU-DVB
Place	**:** Eastern Cape outside Uitenhage (FAUH) aerodrome
Date	**:** 25 March 2015
Time	**:** 1137Z

All times given in this report are Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose of the Investigation:

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (2011) this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and ***not to establish legal liability****.*

Disclaimer:

1. FACTUAL INFORMATION

1.1 History of Flight

1.1.1 The pilot, accompanied by a passenger, was engaged on a private flight around the general flying area of the aerodrome. According to the eye witness who was standing next to the hangars on the western side of the aerodrome, he observed the aircraft during take-off from runway 26 which was uneventful. However, on the downwind of the left-hand circuit, at approximately 200 feet (ft) above ground level,

the aircraft was observed pitching in a nose-down attitude, following the three violent-sounding loud bangs heard, whereupon it crashed into the bushy terrain.

Figure 1: Shows a google view of the aerodrome

1.1.2 Approximately five minutes later, a large amount of smoke was observed in the direction where the aircraft was last seen falling. The fire erupted and engulfed most of the aircraft structure before any person could reach the accident site. Both occupants of the gyro were fatally injured.

1.1.3 The accident occurred during visual meteorological condition, on the location approximately 100 meters from the fence outside the aerodrome, at GPS co-ordinates: S 33° 47´ 14.7″, E 025° 23´ 19.4″ and a field elevation of 261 ft.

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	1	-	1	-
Serious	-	-	-	-
Minor	-	-	-	-
None	-	-	-	-

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed during the accident sequence.

Figure 2: Shows the remains of the aircraft (Gyrocopter)

1.4 Other Damage

1.4.1 None

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	49
Licence Number	0270446040	Licence Type	National Pilot L		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	WCM				
Medical Expiry Date	30 November 2015				
Restrictions	Standby corrective lenses or glasses				
Previous Accidents	None				

Flying Experience:

Total Hours	358.5
Total Past 90 Days	4.2
Total on Type Past 90 Days	4.2
Total on Type	232.7

1.5.1 The accident pilot was also the owner of the aircraft. His logbook was last updated on 18 December 2014, which added up to 357.3. The aircraft flight folio was last updated on 15 February 2015.

1.5.2 According to the second eye witness who also works in the same airfield, the pilot was at times observed performing maintenance on the aircraft. On the day of the accident, the pilot was also observed making some adjustments on the aircraft mast assembly. Prior to the accident flight, the pilot had, in between flights, performed maintenance works on the aircraft's mast assembly adjustment components.

1.6 Aircraft Information

Airframe:

Figure 3: Shows the aircraft type

Type	Gyroplane	
Serial Number	H2-03-14-607	
Manufacturer	Air Force Royalty	
Date of Manufacture	2005	
Total Airframe Hours (At time of Accident)	559.2	
Last MPI (Date & Hours)	12 November 2014	503.3
Hours Since Last MPI	55.9	
C of A.T.F (Expiry Date)	11 November 2015	
C of R (Issue Date) (Present owner)	29 November 2009	
Operating Categories	Part 24	

Engine:

Type	Subaru E J 2.5
Serial Number	B247474
Hours Since New	559.2
Hours Since Overhaul	TBO not yet reached

Main Rotor:

Type	ANMT
Serial Number	4134-1 & 4140-1
Hours Since New	559.2
Hours Since Overhaul	TBO not yet reached

Propeller:

Type	Warp Drive N19035(x4)
Serial Number	N 13996
Hours Since New	559.2
Hours Since Overhaul	TBO not yet reached

1.6.1

The gyroplane was equipped with a Subaru EJ22 carburetted engine, producing 130 horsepower, and driving a four-bladed 'Warp Drive' carbon-fibre propeller, which rotates, when looking forward, in an anti-clockwise direction. The engine operates on 91 to 93 Octane Mogas and the gyroplane is equipped with a fuel tank of 25 US gallons capacity, giving an endurance of around four hours. The gyroplane has a maximum airspeed of 140 mph and a maximum cruise speed of 90 mph.

It is fitted with a two-bladed glass-fibre main rotor which turns in an anti-clockwise direction when viewed from above. The blades incorporate an aluminum spar. The rotor mast can be moved fore and aft in order to adjust the gyroplane's centre of gravity (CG) to accommodate pilot weights of between 135 and 265 pounds.

1.6.2 According to available maintenance records, the last MPI on the aircraft was conducted and certified by an approved person on the 12 November 2014. However, on the 18 November 2014, the owner of the aircraft conducted maintenance on the aircraft by replacing the engine mountings, rotor blades and the mast bump bushes.

1.6.3 According to one of the witnesses who works around the airfield, some months before the accident date, the aircraft was involved in an incident (roll-over) during take-off. The said incident was never reported to the local investigating authorities. A trace of the rotor change repair maintenance was found in the maintenance records. This was also attested to by the aircraft manufacturer stating that the aircraft owner/pilot contacted them, requesting to purchase new rotor blades and other aircraft components.

According to the manufacturer, it became a concern as the aircraft was still new and was expected to have less flying hours and years of operation before any change of components. The type of the incident was described as a major roll-over by the aircraft manufacturer due to damages caused to the aircraft at the time. During investigation, the aircraft manufacturer stated that, except for the rotor blades, other components were never procured with them as they did not know of any other source in South Africa.

The work done, as stated above, was conducted and signed out by the pilot/owner on the 18 November 2014. No records were found with any of the local regulating authorities or entities showing that the pilot had a valid or certified authorization for maintenance approval on any aircraft type. The person who helped the owner also stated that he is an ex-flight engineer from the Air Force who retired some years ago. On the date of the accident, he was not there as he was away for about three weeks due to medical conditions.

1.7 Meteorological Information

1.7.1 Meteorological information as obtained from the South African Weather Service

Wind direction	230°	Wind speed	13kt	Visibility	9999
Temperature	26°C	Cloud cover	SCT	Cloud base	020
Dew point	18°C				

Note: The meteorological information above is for FAPE, which is situated 30 km away from FAUH.

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with the standard navigational equipment as per the equipment list approved by the Regulator. There were no recorded defects to navigational equipment prior to the flight.

1.9 Communications

1.9.1 The aircraft was equipped with very high frequency (VHF) communications equipment, approved by the Regulator. There were no recorded defects on the communications equipment prior to the flight.

1.10 Aerodrome Information

1.10.1 The aircraft accident occurred 100m away from the perimeter fence outside the aerodrome in the south eastern direction.

Aerodrome Location	Eastern Cape Province FAUH	
Aerodrome Co-ordinates	S33° 47´ 07.8″, E025° 22´ 59.8″	
Aerodrome Elevation	289 ft	
Runway Designations	08/26	16/34
Runway Dimensions	800m X 25m	700m X 25m
Runway Used	26	
Runway Surface	Prepare Grass Surface	
Approach Facilities	None	

1.11 Flight Recorders

1.11.1 The aircraft was not equipped with a flight data recorder or a cockpit voice recorder. Neither recorder was required by the relevant aviation regulations.

1.12 Wreckage and Impact Information

1.12.1 The aircraft accident occurred in a bushy terrain during a circuit flight around the aerodrome. The terrain was not easily accessible; however, a way leading to the aircraft wreckage was created with the help of road workers who were doing road construction in the area near the accident. The aircraft wreckage was located on the south-eastern side of the aerodrome, at a distance of approximately 100 m from the perimeter fence. The accident site indicates two points of impact with some bush damages in the direction of where the main wreckage was found. The initial point of impact in relation to the flight path heading direction was behind the final point of impact where the aircraft was engulfed by post impact fire.

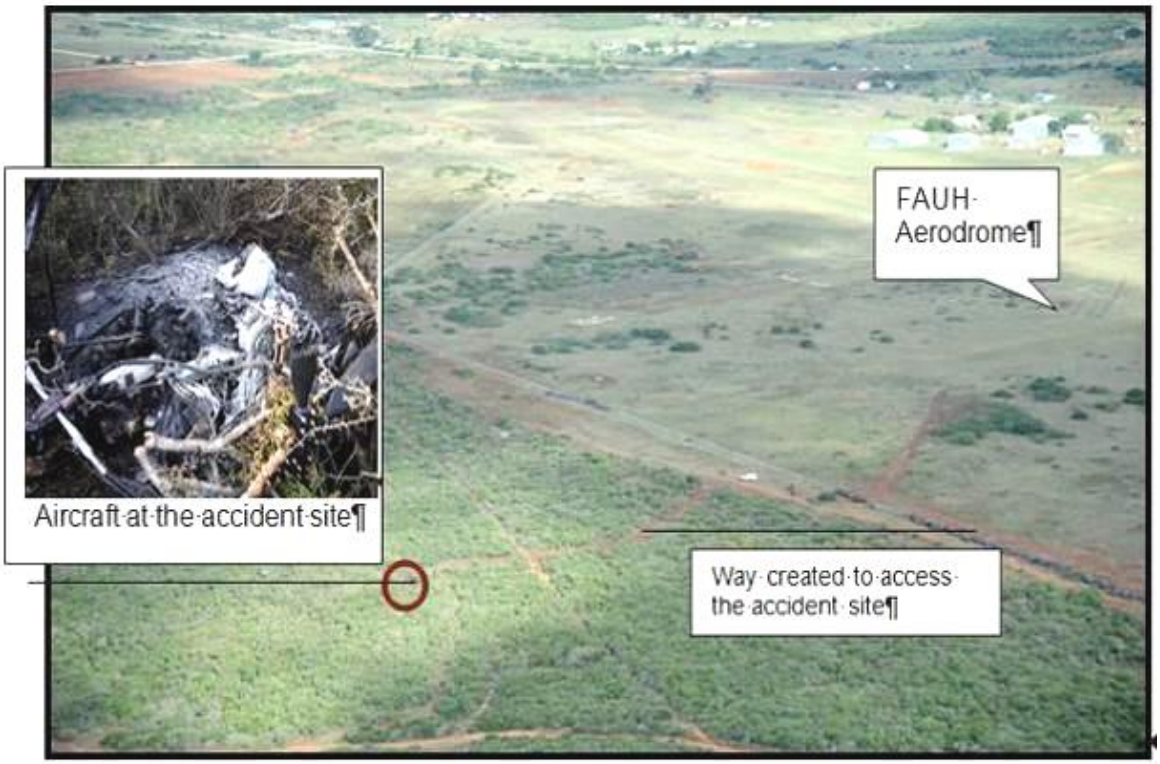

Figure 4: Shows the accident

1.12.2 The wreckage observation was as follows:

Most of the aircraft fuselage structure and engine were engulfed by fire.

- All four propeller blades were recovered during aircraft recovery, three of which were damaged due to contact with the rotor blade during flight. One propeller blade was recovered at a distance of approximately 150 m in the direction at which the aircraft was approaching from. Two more propeller blades were still attached to the propeller assembly. One propeller blade was found with damages to the tip of the leading edge with two of the four attachment bolts missing. The third blade was found at the point of initial impact. The damages on all three propeller blades are consistent with the damage that occurred when the engine was turning at high power.

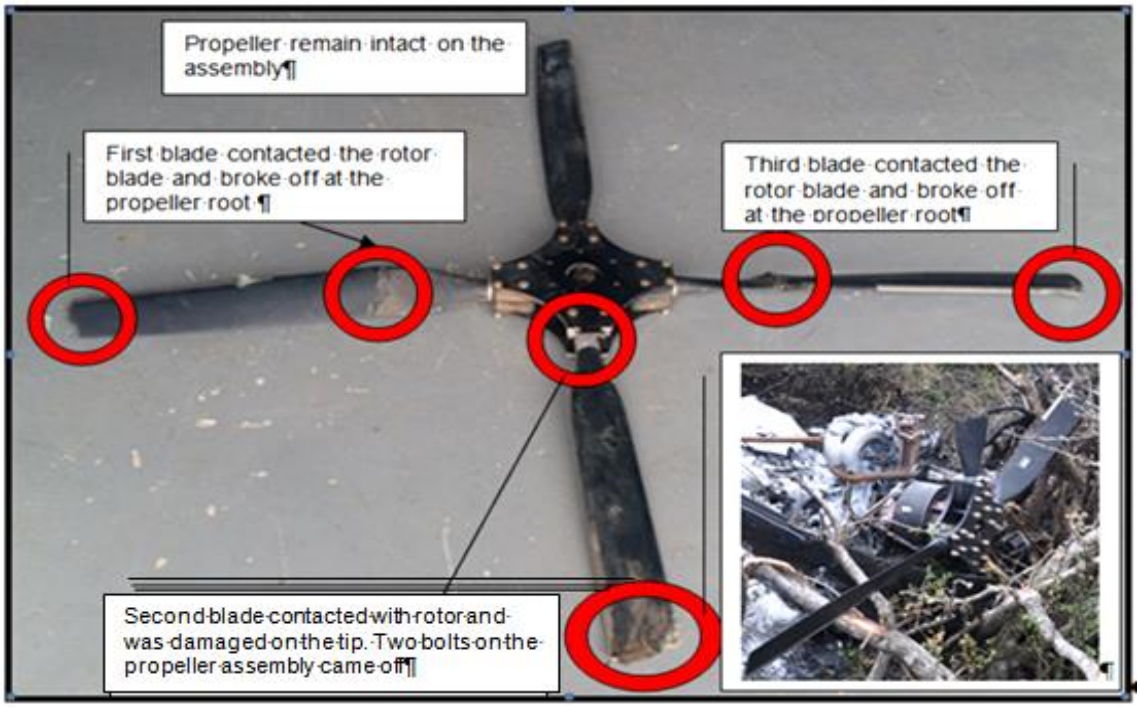

Figure 5: Shows the recovered aircraft propeller assembly

- The rotor blades did not separate from the mast assembly and had evidence of fire damage. One of the rotor blades showed evidence of contact marks with a moving object at a distance, equivalent to the propeller tip position.

Figure 6: Shows damage to the rotor blade and the contact mark with the propeller blades

- The aircraft windshield was found at some distance away from the burned aircraft wreckage. Blood stains were observed on the inside of the wind shield; however, there were impact marks on the outside.

- Damage to the aircraft structure shows that the impact was severe at a nose-first attitude (high angle of impact) and a high speed.
- There were visible signs of damage to the engine, which were attributed to the impact.
- The aircraft tail skid wheel was separated from the main wreckage and did not sustain any damages.

According to the evidence on the vertical stabiliser, which was recovered within a radius of approximately 10m from the main wreckage, the damages are consistent with impact caused by contact with a rotor blade however more damages might have resulted during the impact sequence on the bushy terrain. (Refer to figure 7 below)

Figure 7: Shows the damages on the vertical stabiliser

1.13 Medical and Pathological Information

1.13.1 The aircraft was consumed by post impact fire and fatally injuring both occupants.

1.14 Fire

1.14.1 There was post-impact fire during the accident. According to the eye-witness, they only saw smoke in the direction of the aircraft crash at approximately 5 minutes after the impact.

1.15 Survival Aspects

1.15.1 All occupants of the aircraft were fatally injured. Due to the attitude of the aircraft impact and the fire that erupted during post impact, the occupants were burnt. The aircraft is equipped with shoulder harnesses which the occupants were making use of and which were destroyed by fire.

1.16 Tests and Research

1.16.1 The aircraft engine was recovered for further investigation tests. Although it was burnt during the accident sequence, no anomalies were found during the teardown inspection. It was concluded that damages on the engine were due to the post-impact fire.

Figure 8: Shows how clearance demonstration was achieved

1.16.2 To conduct an experiment, the same type of aircraft was used to illustrate the clearance between the propeller and the main rotor as provided by further restrictions of the gimble head/stop. This was after the findings of the wreckage examination, whereby the mast assembly gimble head bolts were adjusted. With settings as found on the aircraft in Figure 9 below, the rotor has sufficient clearance during operation condition that prevents contact with the propeller. With settings as observed on the gimble heads of the accident aircraft as shown in Figure 11, during simulation the rotor has a high chance of making contact with the propeller blades

during operation.

With the rotor slightly aligned with the propeller in both settings, force was exerted on the rotor blade, forcing it down to make contact with the propeller blade.

Figure 9: Shows the clearance with the original adjustment as it was found on the aircraft type

Sufficient clearance was observed with the original settings on the serviceable aircraft during demonstration.

Figure 10: Contact possible when bolts are set to the position as they were found on the accident aircraft

When bolts were set to the position as found on the accident aircraft mast

assembly, the rotor clearance to the propeller showed possible contact during operation activities. Refer to Figure 11 below.

Figure 11: Shows the mast assembly gimble head/stop adjustment as found on the accident aircraft

The mast assembly has two sliding plates (gimble head/stop) in both front and rear. The gimble head/stop was adjusted equally, as observed during the investigation. According to the manufacturer, this can only be done as recommended by the manufacturer and should be performed by an aircraft maintenance-approved person. The slide adjustable (gimble head/stop) plate provides extra stop for the rotor mast assembly. A 1 cm adjustment is equivalent to a 1-degree angle deflection longitudinally on the rotor blade. The slide plate on the accident aircraft was found flashed to the maximum adjustment.

The aircraft manufacturer provided the following information, with reference to the Aircraft Type Pilot Operational Handbook:

The adjustment of the gimble head/stops has to be made following the manufacturer's advice; it is not advisable for any aircraft type owner to adjust these. This allows the gimble head movements front and aft. The normal adjustment on the front movements, with keel lever control, allows -1 degree while aft movements are 18 degrees. Any adjustments outside the above will cause the rotor blades to make contact with the vertical tail or ground as well as the propeller.

By default setting -1 degree forward, 18 degree backward, if you go 22 degrees or more, this will have catastrophic consequences in flight.

SACAA Part 44 of the Civil Aviation Regulations

Persons to carry out maintenance

44.01.4 (1) No person may carry out maintenance on an amateur built aircraft or a production built non-type certificated aircraft, or any component thereof, unless such person

(c) is the owner of the aircraft, provided that an appropriately rated approved AMO, AME or Approved Person, rated in accordance with Subpart 4 of Part 66, performs a dual check on the maintenance which was carried out; or

(d) is an appropriately rated approved AMO, AME or approved person, rated in accordance with Subpart 4 of Part 66.

1.17 Organisational and Management Information

1.17.1 This was a private flight guided by standard Part 94.

1.17.2 According to the maintenance records, the aircraft was equipped and maintained in accordance with approved procedures by both a regulator-approved person and and aircraft maintenance organisation (AMO).

1.17.3 Following the accident, the aircraft manufacturer released a Safety Bulletin 53, dated 16 October 2015, which forbids aircraft-type owners and non-aircraft maintenance-rated personnel to conduct any adjustment, maintenance and repair on critical components.

1.18 Additional Information

1.18.1 Operation of the Gyrocopter

Autorotation in forward flight

The information is extracted from Rotorcraft Flying Handbook 2000, Chapter 16.

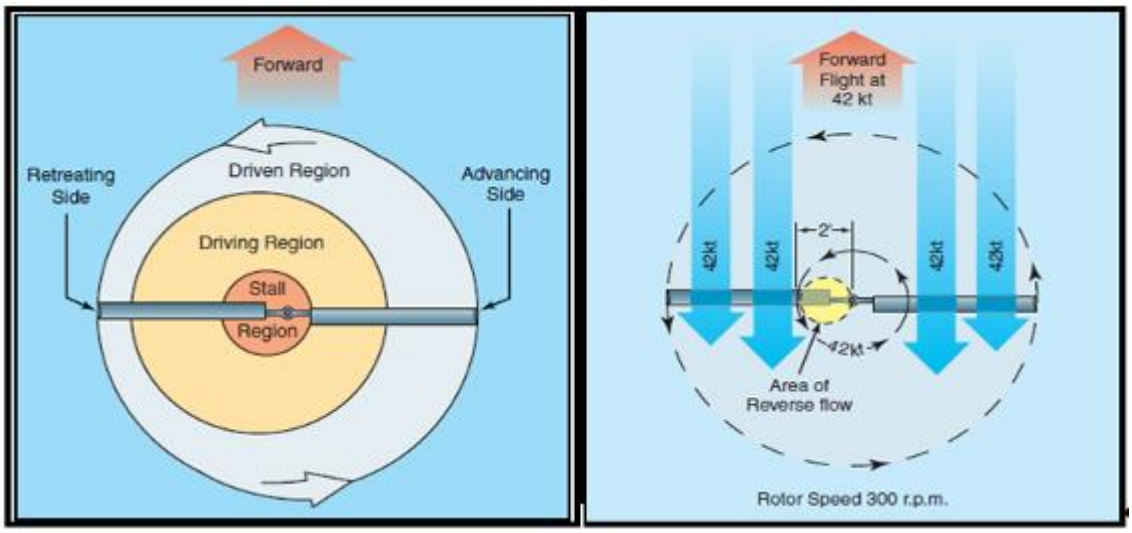

Figure 12: Shows the disc region in forward autorotation

The aerodynamics of autorotation applies to a gyroplane in a vertical descent. Because gyroplanes are normally operated in forward flight, the component of relative wind striking the rotor blades as a result of forward speed must also be considered. This component has no effect on the aerodynamic principles that cause the blades to auto-rotate, but causes a shift in the zones of the rotor disc. As a gyroplane moves forward through the air, the forward speed of the aircraft is effectively added to the relative wind striking the advancing blade, and subtracted from the relative wind striking the retreating blade.

To prevent uneven lifting forces on the two sides of the rotor disc, the advancing blade teeters up, decreasing the angle of attack and lift, while the retreating blade teeters down, increasing the angle of attack and lift. The lower angles of attack on the advancing blade cause more of the blade to fall in the driven region, while higher angles of attack on the retreating blade cause more of the blade to be stalled. The result is a shift in the rotor regions toward the retreating side of the disc to a degree directly related to the forward speed of the aircraft.

ROTOR SYSTEMS SEMIRIGID ROTOR SYSTEM

Any rotor system capable of autorotation may be utilised in a gyroplane. Because of its simplicity, the most widely used system is the semi-rigid, teeter-head system. This system is found in most amateur-built gyroplanes. In this system, the rotor head is mounted on a spindle, which may be tilted for control. The rotor blades are

attached to a hub bar that may or may not have adjustments for varying the blade pitch. A coning angle, determined by projections of blade weight, rotor speed, and load to be carried, is built into the hub bar. This minimises hub bar bending moments and eliminates the need for a coning hinge, which is used in more complex rotor systems.

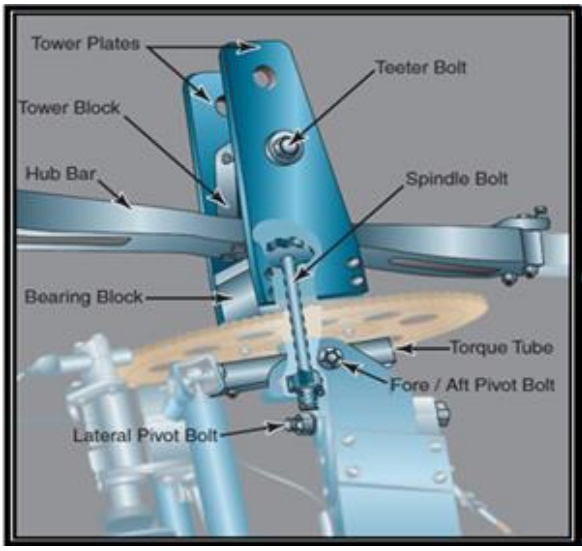

Figure 13: Shows a basic teetering rotor system

Figure 14: Shows gimble (slide plates) stop adjusted

A tower block provides the under sling and attachment to the rotor head by the teeter bolt. The rotor head is comprised of a bearing block in which the bearing is mounted and onto which the tower plates are attached. The spindle (commonly, a vertically oriented bolt) attaches the rotating portion of the head to the non-rotating torque tube. The torque tube is mounted to the airframe through attachments, allowing both lateral and longitudinal movement. This allows the movement through which control is achieved.

CYCLIC CONTROL

The cyclic control provides the means whereby you are able to tilt the rotor system to provide the desired results. Tilting the rotor system provides all control for climbing, descending, and banking the gyroplane. The most common method to transfer stick movement to the rotor head is through push-pull tubes or flex cables.

Some gyroplanes use a direct overhead stick attachment rather than a cyclic, where a rigid control is attached to the rotor hub and descends over and in front of the pilot. Because of the nature of the direct attachment, control inputs with this system are reversed from those used with a cyclic. Pushing forward on the control causes

the rotor disc to back and the gyroplane to climb, pulling back on the control initiates a descent. Bank commands are reversed in the same way.

1.18.2 The aircraft manufacturer, who also had experience of flying with the accident pilot during his visit at the factory in Upington, stated that, during the flight he noticed that the pilot had his own technique of flying the aircraft. The pilot performed what they refer to as a 'pop up, meaning during take-off, the pilot allowed both the aircraft and the rotor blade to gain high speed and then pulled the control sticks full back to achieve a quick rate of climb. This was risking the aircraft as it could enter into a low G state. However, he did warn the pilot and he was not happy about the remarks.

1.18.3 Adjustment, Maintenance and Repair on Critical Components

This information was extracted from Rotary Airforce Service Bulletin No 53.

A Service Bulletin (S.B.) is a notice to an aircraft operator from a manufacturer informing him/her of a product improvement. An alert service bulletin is issued when an unsafe condition shows up that the manufacturer believes to be safety related as opposed to a mere improvement of a product.

Rotary Airforce South Africa issues services bulletins because we believe compliance will make our products safer.

Further to the above, please accept the following information:

1.1 We remind all individuals, owners, operators to refer to Product Notice 50, when it comes to adjustments, repairs, maintenance and services relating to the RAF 2000 Gyroplane.

1.2 It has come to our attention that adjustments are carried out on critical components like the rotor blades and hub bars of the RAF 2000 Gyroplane by non-approved individuals, owners, and operators. The RAF rotor blades and hub bars are set at the factory as a unit.

1.3 Please note that only the OEM (Original Equipment Manufacturing), RAFSA AMOrg M688, AMO1309 and the (RAF TAP) Technical Approved Persons, as appointed by the OEM, that have received the training, skills and that are equipped with the necessary equipment, like torque wrenches, and have access to the applicable torque values, vibration analysis equipment, tracking lights, pitch and

patterning equipment and other associated special tools, are allowed to carry out inspections, re-certification, maintenance and replacement of these components.

1.4 All critical components like rotor-blades, hub-bars, gimble heads must be returned to the OEM or the RAF TAP for any adjustments or activities on these components.

1.19 Useful or Effective Investigation Techniques

1.19.1 None

2. ANALYSIS

2.1 According to the available records, the pilot was licensed and medically certified for the flight. The aircraft was endorsed on his license.

2.2 According to the available maintenance records, the aircraft's last mandatory periodic maintenance was conducted and certified by an approved person in accordance with the manufacturer's prescribed procedures. However, on 18 November 2014, the pilot/owner was helped by an ex-military flight engineer to replace the mast bump bushes and rotor blades. This was following an incident that was never reported to the local authorities. The major part of the replacement of the aircraft components was conducted by the owner and signed off on the log books. However, the pilot was not certified and approved for maintenance on the aircraft type or any of the aircraft. The aircraft is a non-type certified airplane, which allows the owner to do minor maintenance like engine oil changing and others, which can be easily carried out during pre-flight inspection.

2.3 On the day of the accident flight, the pilot was observed conducting adjustments on the mast assembly gimble head/stop bolts. Several uneventful flights were conducted with in-between mast adjustments carried out on each landing. During the accident flight, the pilot was accompanied by a passenger. The aircraft, following a left turn while flying downwind, was heard making three loud bang sounds and was then observed losing height as it crashed into the bushy terrain. According to the available evidence on both the rotor blade and the damages to the three of the four propeller blade tips, the rotor blade made contact with the three propeller blades during flight in that instant. This was also proven during

experiments when demonstrating the possibility of the rotor contact with the propeller when the slide stop is tampered with. According to the aircraft type service bulletin No53, any adjustment outside the default settings of 1 degree front and 18 degrees aft will allow the rotor blades to make contact with both the tail stabiliser and the propeller during operation.

2.4 The gyrocopter type is equipped with two teetering rotor blades. At the time of the flight, the gimble stops were adjusted to the maximum position with the mast assembly (refer to Figure 14). This allowed the retreating blade at the time, which flexed down and flapped, to make contact with the tail stabiliser, followed by contact with three propeller blades during flight. Contact marks were observed on one of the rotor blades during the investigation follow-up at a distance equivalent to the propeller position. Following contact, the aircraft engine and the rotor blades came to a complete stop. This resulted in a loss of lift that could have been generated by the main rotor through autorotation, which is a design fail-safe feature on the rotorcrafts. The aircraft impacted nose first, prior to it flipping over and was engulfed in fire.

2.5 The weather on the day of the accident prevailed with good conditions and cannot be considered a contributing factor to this accident. The aircraft had enough fuel on-board, which contributed to the post-impact fire during the accident.

3. CONCLUSION

3.1 Findings

3.1.1 According to the available records, the pilot was licensed and medically certified for the flight.

3.1.2 The pilot was not licensed as a maintenance-approved personnel member on any of the aircrafts.

3.1.3 The aircraft had a valid Authority to Fly at the time of the accident.

3.1.4 According to the available maintenance records, the pilot contravened Part 44 of the Civil Aviation Regulations by replacing major parts, signing off the maintenance

records and adjusting the mast assembly critical flight safety gimble stops without the manufacturer's knowledge prior to the accident flight.

3.1.5 The aircraft's gimble stops were adjusted to the maximum position prior to the accident flight. This allowed the rotor blades to make contact with both the tail stabiliser and the propeller blades during flight.

3.1.6 Both aircraft engine and the rotor blades came to a complete stop, following contact, resulting in a total loss of lift, and subsequent impacting of the aircraft nose first with the bushy terrain.

3.1.7 The aircraft was engulfed in fire following the impact.

3.1.8 According to Part 44 of the Civil Aviation Regulation: No person may carry out maintenance on an amateur built aircraft or a production built non-type certificated aircraft, or any component thereof, unless such person

> (c) is the owner of the aircraft, provided that an appropriately rated approved AMO, AME or Approved Person, rated in accordance with Subpart 4 of Part 66, performs a dual check on the maintenance which was carried out; or

3.2 Probable Cause/s

3.2.1 The aircraft crashed following a left hand turn whereby the rotor impacted the propeller, the tail stabilizer and resulting in stoppage of rotor and an engine causing the aircraft to loose lift completely and fall from the sky. The pilot also disregarded the standard safety oversight.

4. SAFETY RECOMMENDATIONS

4.1 None

5. APPENDICES

5.1 None