We are diminished by the loss of founding member Charlie Longstaff. An accomplished builder, his projects included an Oldsmobile powered Spitfire replica and an Emeraude. Fair winds and blue skies, Charlie. You'll be missed.

we get any action. In the meantime we have moved it to the hangar for dry storage during the winter. John de Visser has constructed a pair of wheels to allow the aircraft to be moved easily if required.

The investigation into the crash of Zenith 601 C-GYNX has been completed. Peter Whittaker led the team and Rob Prior, Gerard Van Dyjk, Dave Rose, John de Visser, John Macready and Andy Pearson participated. The engine failure was determined to be due to a seizure of the distributor on the Subaru engine which stopped the engine abruptly on climb out. Miraculously the pilot was hurt but not fatally. The aircraft has been disassembled and all salvageable parts sold. The pilot is recovering slowly from the accident.

Dave Marsden has recovered his Skylark Kit from California and has moved it into the workshop. The chapter agreed to rent the workshop to David for a period of three months until the chapter determines if the aircraft kit is suitable for a chapter project. At present the owner, Dave Marsden and Dave Rose, our Aircraft Chairman, and the author, John Macready have been working on the aircraft to organize the building process.

The Annual Christmas Party was held on Tuesday December 3, 2013. Approximately 40 people were in attendance. Raymond and Jill Colley and set up the decorations, Peter Whittaker and Terry Johnson purchased the food and John de Visser prepared the clubhouse. The party was a success and a very enjoyable evening was had by all. Thanks to all the organizers.

Sadly, we had news that Charlie Longstaff had passed away in his hometown in Manitoba. He recently moved there to be closer to his family. Charlie was one of the founding members of Chapter 85 and a very accomplished airplane builder. He was a very fine person and we will miss him greatly.

Our Vice President, Peter Whittaker, has written an excellent article about building and flying his Zenith 601 HDS. The article has been published in the September- October issue of the Recreational Flyer. We intend to publish our report concerning the Zenith accident in the next issue.

At the last general meeting Tom Boulanger reported that we have approximately $36,700.00 in our bank account. Our expenses this year exceeded our income by about $2000.00 due to the failure of the Turbi project and damage repair earlier in the year.

There were no meetings slated for December.

Merry Christmas everyone. See you in January!

John Macready, President, RAA Chapter 85

News and Stuff

Pancake Breakfast Helpers

If you would like to help out during our pancake breakfasts please give your name to Joan Cox, so that we may if needed. Contact her at jr_rosicox@telus.net or leave a message at 604-596-7635.

Airplane Pictures

Lynn Walker is working on a wall of planes. If you want your picture on the wall or have founding members' planes pictures please contact her. 8x10, 5x7, 7x8 or 4x6 frame sizes are available.

Free Project

Terry Elgood writes: "A acquaintance of mine, was building the same aircraft as I built (GREX), but failed to progress. He now wants to be rid of it and is offering it up for free. It has a almost complete wood fuselage and one wing is spars with ribs on and some geodetics in place. Ribs for the second wing have been built too.

"Since you are all men in the know on all things flying, I thought you might know of someone looking to get into aviation on the cheap".

If anyone's interested the fellow's name is Jeff Livesly, he lives in Chilliwack and can be reached at 604-799-3286.

Turbi for Sale

The club's late, great Turbi built by Gogi, for sale. For more information contact Dave Rose at (604) 434-1421, dave_rose@telus.net

The Turn and Bank is a Publication of Chapter 85 of the Recreational Aircraft Association of Canada. We are located at Delta Heritage Air Park 4103 104 St, Delta, BC V4K 3N3.

Design and printing by George Gregory.
Any suggestions, pictures or newlsetter contributions can be emailed to George Gregory at george@sidekickgraphics.com

TURN AND BANK

November - December 2013

Figure 8. Accident investigation team, left to right: John Macready, Peter Whittaker, Rob Prior (holding distributor), Gerard Van Dijk and Dave Rose. John de Visser and Andy Pearson were unavailable at the time of the photograph. Gerard Van Dijk and Andy Pearson dismantled the distributor. Bob Cutting, a former member of Chapter 85 was also in attendance for the disassembly process.

ON NOVEMBER 3RD, 2013 Zenair 601 HDS C-GYNX was conducting initial circuits at Delta Heritage Airpark, Delta, British Columbia, Canada (CAK3) after being imported from the USA. The aircraft was powered by a Subaru EA81 engine with a Stratus aircraft conversion. On the third circuit after take-off and upon initial climb out, the engine stopped abruptly at an estimated height of between 150 and 200 feet above ground. The aircraft suffered a very hard landing on the grass runway and bounced into a row of bushes lining the runway. The aircraft was deemed a write-off as the landing gear was destroyed and the fuselage both behind and forward of the cabin was crushed. The pilot was alive and conscious at the scene and sustained non-life threatening injuries. After the pilot was safely removed from the aircraft, the structure was secured by turning off all electrical and fuel systems. The aircraft was moved into a hangar where it was covered until a later investigation could take place.

After discussion with the Transportation Safety Board, it was recommended that Chapter 85 of the Recreational Aircraft Association Canada, undertake an investigation into the accident with the permission of the pilot/owner. The owner requested that the chapter proceed with an investigation and it was carried out on Saturday, November 23rd, 2013 at Delta Air Park.

Summary

The aircraft was flying normally during post import test flights. Several engine components were serviced during the inspection period including the distributor. Fragments of metal were found jammed between the distributor housing and the shaft. These metal fragments caused the distributor shaft to seize and in turn this stripped the aluminum drive gear at the engine. The loss of rotor movement stopped ignition to the engine. It was later established that a brass distributor rotor tip had become lodged in the distributor housing during servicing of the distributor which led to mechanical failure of the distributor. Accounting for all lost items during construction or servicing an aircraft is a task that is essential to flight safety.

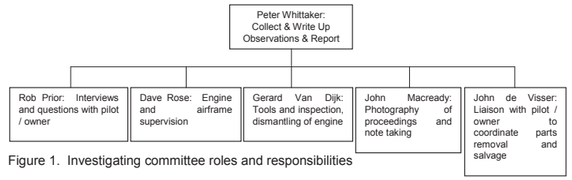


Figure 1. Investigating committee roles and responsibilities

Investigation Committee

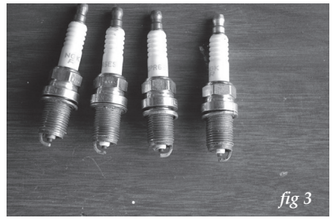
An investigation committee was formed from members of Chapter 85 with a plan to carry out an inspection of the engine and airframe on Saturday, November 23rd, 2013. The committee consisted of the individuals with their roles and responsibilities outlined in Figure 1. The investigation was undertaken with the permission and involvement of the pilot / owner.

Background Information

A number of questions were discussed with the pilot/owner prior to the inspection and these provided background information about the condition and readiness of the airplane prior to the flight. The aircraft had been purchased in the USA and flown by the previous owner and the new owner to Delta Heritage Airpark (CAK3), British Columbia, Canada. The trip logged 17 hours of air time. Afterward, the aircraft underwent an inspection by MDRA (Ministers Designate Recreational Aircraft) before being cleared for further flight in Canada. The only modification required to the engine was the addition of electric carburetor heat units to both carburetors. Information about the condition of the aircraft prior to flight from the pilot / owner confirmed that:

1. The engine had accumulated 317 hours at the time it arrived at CAK3
2. All requirements from MDRA had been satisfied
3. The engine had been given a thorough run-up prior to take-off, the Hobbs indicated 0.4 hours of which approximately 0.2 hours were for the engine run-up
4. Sufficient fuel was on board for 1.4 hours flying (30 *continued*


fig 2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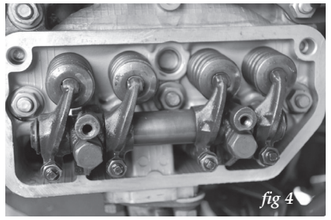
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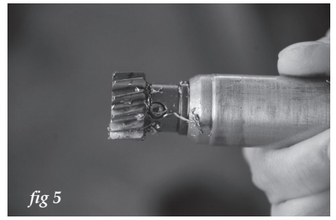
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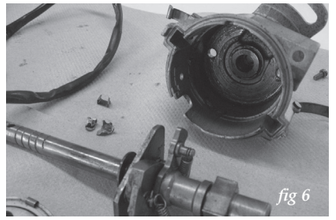
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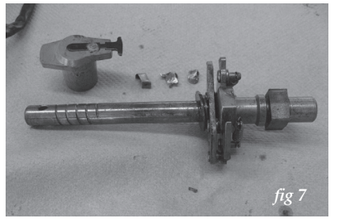
fig 7

Figure 2: The aircraft was raised and blocked to put the engine at a suitable height for inspection and allow a tray to be placed underneath to catch oil and any loose parts. Figure 3: The spark plugs each have normal gaps and have not been deformed by piston head impact. Figure 4: Valves are undamaged and moved normally when the engine crank was rotated. Figure 5: The steel gear at the end of the distributor drive shaft is covered with aluminum shavings from the aluminum drive gear with which it meshed on the engine. Figure 6: The distributor housing and shaft assembly. The inside of the distributor housing is scratched which could result from damage caused by the metal fragments. Figure 7: Distributor shaft with brass and other metal fragments found when the distributor assembly was taken apart. The rotor is also damaged.

litres) with the header tank at ¾ full
5. The engine achieved full take-off RPM
6. The distributor had been serviced prior to test flying at which time the original brass rotor tip, which was loose, fell off, was lost and replaced with a new one

Inspection Procedure

The aircraft, a Zenith 601 HDS, was prepared for inspection by raising it with an engine hoist, placing blocks under the main gear attachment points and saw-horses under the wing spars (Fig.2). This allowed for cleaning and removal of leaves and debris from underneath.
After the aircraft was raised and blocked:
1. The crankshaft was rotated to check movement in both clockwise and counter clockwise directions
2. All four spark plugs were removed to check their condition and provide a view of the piston heads
3. The rocker covers were removed to observe valve movement when the crankshaft was rotated
4. The oil pan was removed to allow inspection of the lower crankcase
5. The distributor cap was removed to observe movement of the rotor with crankshaft rotation
6. The distributor assembly was removed from the engine
7. The distributor was disassembled

Inspection Findings:

1. One blade of the 3 blade propeller was broken
2. The throttle was found in the full on position, the throttle could be moved only with difficulty because of a kink in the cable caused by deformation of the firewall from the impact
3. Spark plugs were removed and all had normal gaps (Fig.3)
4. Left and right valve rocker covers were removed and no sign of damage was apparent, all valves operated normally when the crank was rotated (Fig.4) and all pistons moved
5. The engine crank was rotated and turned freely clockwise but jammed when turned counter clockwise
6. The pistons could be seen moving normally when observed through each spark plug hole
7. The oil dipstick indicated a normal oil level, the oil was thick and black
8. The oil was drained and the oil pan was removed, a few magnetic metallic pieces were seen in the oil
9. All starter motor and other electrical system connections were intact and normal
10. The distributor cap was removed to expose the rotor, which did not turn when the crank was rotated
11. The distributor was removed and the steel drive shaft end gear was found to be covered in aluminum shavings (Fig.5), the engine could be turned freely in both directions after removal of the distributor
12. A borescope examination of the aluminum engine drive gear to the distributor shaft gear showed that all aluminum teeth had been stripped off of the gear
13. The distributor was taken apart, the inside of the housing was found to be damaged (Fig.6) and several metallic fragments, including a brass fragment (the original rotor tip), were found jammed between the shaft (Fig.7) and the housing

Discussion

A series of circuits had been planned to allow for familiarization with the aircraft type. The circuit that led into the engine failure was planned as a touch and go leading into a short field take-off with its inherent steeper climb angle. It is not known if the steeper than usual climb angle was a contributing factor to the engine failure. The pilot brought the throttle back to idle over the threshold for touchdown and after ensuring that the aircraft was lined up with the runway centre, applied full power for take-off. The engine stopped approximately 150 to 200 feet above ground. The short field take-off procedure was carried out at the normal airspeed for this aircraft which is 70mph. A normal take-off with a higher airspeed and lower climb angle may have allowed for a more controlled landing with little or no damage. In this case, the steep climb angle resulted in a stall from which the pilot was able to recover just before impact. The pilot suffered injuries which were not life threatening, but the aircraft was damaged beyond repair.

The brass piece from the distributor rotor was lost during preparation for a fuel flow test. This test is required by MDRA as part of the inspection process for an imported aircraft. The distributor cap had been removed to ensure that the engine would not accidently fire during the fuel flow test. After the fuel flow test, the brass rotor piece was missing. After an unsuccessful search of both the engine compartment and the ground beneath the airplane, a new rotor was installed. An engine run-up was performed resulting in normal operation and no indication of any unusual sounds or symptoms.

After analysis of the distributor assembly the investigative team concluded that the missing brass piece from the rotor eventually worked its way between the distributor shaft and housing. A prior hard landing and steep climb angle may have caused it to move into a location where it jammed the shaft. The steel gear at the end of the seized shaft subsequently stripped the gear teeth off of the soft aluminum drive gear mounted at the engine. Since the original rotor tip was loose enough to fall off, it was concluded that it had come into contact with the inside of the distributor cap. It was concluded that the rotor tip had come into contact with something hard enough to jar it loose to the point that it fell off when the distributor cap and housing were removed for the fuel flow test. A possible cause would be if the cap had, at some point, been installed out of alignment. The rotor tip could then have contacted the inside of the cap and become loosened.

The aircraft and engine records provide no information on the service history of the distributor and it is not known if an aluminum gear on the engine to drive the distributor shaft is standard equipment. The inspection procedure and documentation was performed as required by MDRA and the details were recorded in the journey log. Full details of the import and inspection process are given at the MDRA website (www.md-ra.com).

The lesson learned from this incident would be that all aircraft parts, bits and pieces lost during maintenance procedures... must be accounted for prior to flying the aircraft.

Conclusions

The aircraft was flying normally during post import test flights. Several engine components were serviced prior to the test flight circuits including the distributor. Brass and other metallic fragments were found jammed between the distributor housing and the shaft. These jammed fragments stopped the shaft and the attached steel gear. This action then stripped the teeth off of the aluminum drive gear at the engine with which it was engaged. Ignition was lost when the distributor rotor stopped turning and the engine then stopped. The single broken blade on the 3 bladed propeller indicates that the engine was stopped at the time of impact.

These findings and conclusions are based on the best efforts and interpretations of the investigating committee (Fig.8) and are intended to be impartial. The information and conclusions have been recorded for the benefit of other homebuilders and it is hoped that this information can be of use.

Although all actions were taken as prescribed during the importation of this aircraft and in preparing it for flight in Canada, an accident (fortunately not fatal) still occurred. Work on the aircraft and engine was planned and carried out as safely as possible and the aircraft successfully went through normal pre-flight checks and a full engine run-up. The one missing link was the lost distributor rotor piece which was not recovered and accounted for.

The lesson learned from this incident would be that all aircraft parts, bits and pieces lost during maintenance procedures involving the engine or any other moving parts such as control linkages, hinges, cables and control surfaces, must be accounted for prior to flying the aircraft.

The investigating committee wishes to thank the pilot for sharing all of his thoughts and recollections in the events leading up to this accident and for his willingness to share this information with the aviation community.

President's Report

John J. Macready / November - December 2013

The year 2013 comes to a close. Years seem to go by so very fast but we were very productive this year.

The Remembrance Day ceremony came off successfully again due to the dedication of the participants. Air cadets from #655 (Richmond) Squadron performed magnificently under the command of Second Lieutenant Tim Novak and Captain La Vern Richards. The ceremony location was changed to the area in front of Mary's Place and everyone agreed this was a better location. The weather held and the event went off without a hitch. Trevor Skillen displayed his Boeing Stearman and the Harvard group performed a marvelous fly over right at 11:00 AM. Isabelle Hui Bon Hoa played Amazing Grace and sang our anthem beautifully. The Boundary Bay Flying club completed the event with their Fly Past.

At the November general meeting, our guest speaker, Trevor Skillen, presented a talk about his experience flying a P-51 Mustang, "Crazy Horse" accompanied with a video taken during the flight. Trevor has taken time to experience flying high performance warbirds such as the Mustang and lately a two seat Spitfire in England. He has recently purchased a Harvard to go along with his collection of other exotic aircraft. Trevor is the new DAPCOM chairman for the airpark and has been very busy with infrastructure projects such as the refurbishing of the barn and developing a system to supply Mo Gas for use on the field.

The Turbi has not sold, nor have there been any offers. It is advertised locally on posters and nationally and internationally on a number of web sites. We will wait till spring to see if