

N500MZ accident
Anthony Brucie
3/17/2022

The yesterday (the 16th), the fuel control was changed and leak check with a ground run with no leaks detected by the mechanic. An oil pressure Hobbs meter was also installed by a second mechanic. The start on that ground run was a little slow. So the mechanic turned the acceleration up one click and we were going to see what it did in the morning on a cold start.

Today I took my usual preflight fuel sample. The sample was clean, with no contamination present. I then proceeded with my aircraft preflight per the flight manual. There were no discrepancies noted. Once the rain showers in the vicinity lightened up we pushed the aircraft out of the hanger. I went through my start checklist and the aircraft start resulted in me aborting the start because the TOT was going into the mid 800s and I did not want to break our company or manufacture TOT limits. The mechanic then turned the acceleration back down one click. On the subsequent start the TOT temps were in the 770s on the first peak and about 810 on the second peak. I continued through my pre-takeoff checklist, everything checked good, anti-ice and heater valve had about a 12 and 25 degree temperature gain, respectfully. I was full of fuel. Hover checks were also checked good, gauges in green, no lights or horn.

I proceeded on an about 30 NM ferry flight to the LZ at structure 241. During the flight I performed an engine power check, which indicated a -25 cool engine. That is in line with previous power checks that week of -23 and -25. After reaching the LZ, I landed and frictioned down the controls. The crew conducted a tailboard and then the lineman and I went up and installed 16 inner rod and damper setups off the skid onto the fiber wires. We then returned to the LZ and I shutdown the aircraft. We reconfigured the aircraft for longline operations. It started light raining so the mechanic and I put on the engine inlet cover. We waited until the rain let up, which was about 1:30...1:45pm.

I then removed the engine inlet cover and started the aircraft, the TOT peaks were similar to the previous start. The mechanic fueled the aircraft with 10 gallons. I picked up with a 60' longline attached and lifted the ladder with the lineman up and landed him on the top of south side of the first structure (242). I then went back to the LZ and landed, after he was close to being finished clipping the fiber in, I flew back to him and picked up a traveler and brought it to the LZ and returned to him and moved him the north side of the structure and repeated the process. I then flew him to the second structure (243) and landed him and the ladder on the south side of the structure. I went back to the LZ, rolled the throttle to idle and was waiting for him to call to remove a traveler. The lineman then called for me to pick up the traveler. I rolled the throttle back up, gauges were good, no lights or horn and approximately 200 of fuel; I departed the LZ. I picked up the traveler off the wire and flew it to the LZ, the mechanic unhooked it from the line. I then proceeded back

toward the structure the lineman was on. Half way to the structure, at approximately 80-100' and about 30knots, I experienced power loss. I lowered the collective to enter an autorotation. I could not point into the wind because the powerline was in that direction, there was a 20 knot crosswind from the north (my left side). At that altitude and speed I couldn't build much inertia in the rotor system and at about 10' off the ground, yawed left and dropped onto a sloping muddy hill. The left skid caught and spun me around facing back the way I came (west), and chopped the tail and rolled onto the right side of the fuselage. The engine was still at a slow run, less than idle. I pulled the fuel shutoff, because it was right in front of me and I was hanging sideways from my seatbelts. Everything went quiet after a couple seconds. I took off my helmet and unbelted, righted myself, turned off electrical power and opened the pilot door. I then climbed out of the aircraft and tried to access the situation.

Anthony Brucie





RECORD OF CONVERSATION

Michael J. Hodges
Air Safety Investigator
Central Regional Office
Office of Aviation Safety
National Transportation Safety Board

Date: 04/20/2022

Person Contacted: Anthony Brucie (Pilot, Winco – N500MZ)

NTSB Case Number: CEN22LA146

Narrative:

The following is a synopsis of the information provided by Anthony Brucie to the NTSB investigator-in-charge, via a telephone conversation:

- On the day of the accident, he performed the preflight on the helicopter (N500MZ).
 - During the preflight of the engine compartment, he did get “hands on” with the various components. He did touch the b-nut that was later found loose after the accident. The b-nut did not feel loose when he touched it during the preflight. The torque strip was present on the b-nut.
 - Winco has previously put out guidance to their pilots about performing an above and beyond preflight after maintenance work has been performed.
 - He always performs an above and beyond preflight anytime maintenance work has been performed on the helicopter.
 - He feels he has received good training at Winco.
- **** Nothing Follows ****

N500MZ Accident
Dan Murphy
3/18/2022

On 3/5/2022 I removed engine assy. S/N CAE-295873 and installed engine assy. S/N CAE-295832. All work performed was in accordance with Rolls-Royce operation and maintenance manual. The Engine arrived with all accessories previously installed except for the start generator. The tach generators, fuel control, governor, fuel nozzle and bleed valve were already installed prior to receiving engine. Purged air from fuel system prior to starting aircraft. Informed pilot of maintenance that was performed. Then performed ground runs and leak checks then proceeded to adjust idle on fuel control end governor beep range. The starts were abnormal with three peaks on the TOT gauge. Adjusted fuel control the derichment and acceleration to remove abnormal starts. We were having starting issues for the remaining week as we kept on trying to adjust the abnormal starts out of the fuel control.

On 3/16/2022 we decided to remove the fuel control off of engine assy. S/N CAE-295873 and install it on Engine assy. S/N CAE-295832 for troubleshooting purposes. After installing fuel control we purged the fuel system of air. And then we performed a leak check out run and adjusted idle. The initial start up was slow so after ground run was complete adjusted acceleration up one click.

3/17/2022 I got to the airport and performed a fuel sample on the fuel trailer. Then pushed out the aircraft after the rain slowed down. Pilot proceeded to complete his preflight. After pilot completing his preflight I topped off helicopter with fuel. Upon starting the pilot had to abort the initial start due to TOT climbing into the mid 800s. Then proceeded to acceleration back down one click. The subsequent start TOT temps were in the 770s and the second peak was about 810. After that I proceeded to drive out to the LZ where we had our Tailboard. The pilot and linemen proceeded to go to work and then came back and shut down. I installed the 60 foot long line so they can go hang the ladder and continue working. The rain started up again so the pilot and I installed the intake cover and then return to the truck to wait out the rain. Once the rain stopped we removed the inlet cover. And then I added 10 gallons to the helicopter upon pilot request. This was approximately 1:30. Then the pilot started the helicopter with no issues. He proceeded to go to work and hung the ladder with the lineman on the structure. Then came back and landed. Shortly later the lineman called for him to pick up the block. He returned to the LZ with the block I unhooked the block. He repeated this process twice. After unhooking the third block from the long line. I received a call on the radio informing me that the helicopter went down. I rolled up the fuel hose and proceeded out to the field where the helicopter crashed.

Dan Murphy




RECORD OF CONVERSATION

Michael J. Hodges
Air Safety Investigator
Central Regional Office
Office of Aviation Safety
National Transportation Safety Board

Date: 04/21/2022

Person Contacted: Dan Murphy (Mechanic, Winco – N500MZ)

NTSB Case Number: CEN22LA146

Narrative:

The following is a synopsis of the information provided by Dan Murphy to the NTSB investigator-in-charge, via a telephone conversation:

- On 3/16/2022, Dan worked on the helicopter (N500MZ) by himself. There was another mechanic working in the area. Dan installed the fuel control unit on the helicopter.
 - The work was performed in accordance with the Rolls-Royce M250-C230R Series Operation and Maintenance Manual.
 - Dan used an angle head open end wrench to put on the b-nuts. He then would use a crowfoot wrench attached to a torque wrench, to torque the b-nuts to specifications.
 - He would tighten and torque each b-nut, one at a time, when completing the task. The other mechanic inspected the work after Dan completed it. The other mechanic found no issues.
 - After the task was completed, a leak check was performed with the helicopter running on the ground. No issues were noted during the leak check.
 - After the b-nuts were torqued, torque stripes were added. Dan tried to remove all the old torque stripes during the work, but it is hard sometimes to remove it all.
 - For the b-nut that was found loose after the accident, Dan reported that one is the hardest one to work on, in that specific area of the engine compartment.
 - Dan believes that while torquing that specific b-nut, the fuel control unit was contacted by the torque wrench and a false torque reading was likely provided to him.
 - On the day of the maintenance work, Dan felt fine. He did not feel fatigued or distracted. He did not have any major stress events going on in his life at the time. He feels he has received good training at Winco.
 - Dan is familiar with Rolls-Royce Customer Service Letter CSL-A-1166 Maintenance Warning – External Lines and Winco distributed it to all their mechanics after the accident.
 - After the accident, Winco is mandating that mechanics only perform a leak check using shop air instead of checking for leaks while the helicopter is running on the ground.
 - He has been a mechanic for about 15 years, and he has been a mechanic at Winco for about 2 years.
- **** Nothing Follows ****

Hodges Michael

From: Gunsauls, Seth [REDACTED]
Sent: Friday, March 18, 2022 9:32 PM
To: Sorensen Tim; Abel, Jeremiah (FAA); Watkins, Robert (FAA)
Cc: Konig, James (FAA); Hodges Michael; [REDACTED] Powers, Justin; Walker, Trever; Hanson, Chad
Subject: RE: N500MZ ADAIR, IA / ENGINE FAILURE / 03/17/2022 / 1430 CDT
Attachments: N500MZ Pilot Statement - Anthony Brucie.docx; N500MZ Mechanic Statement - Dan Murphy.docx; 5.jpg; 6.jpg; 1.jpg; 2.jpg; 3.jpg; 4.jpg

Follow Up Flag: Follow up
Flag Status: Completed

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Luis and team –

Apologies for the late hour but just got back to the hotel after spending the day with the machine and crew. Our Safety Manager Justin Powers has the draft preliminary NTSB report and will be sending that in shortly. Additionally, attached are long-form statements from the pilot and mechanic assigned.

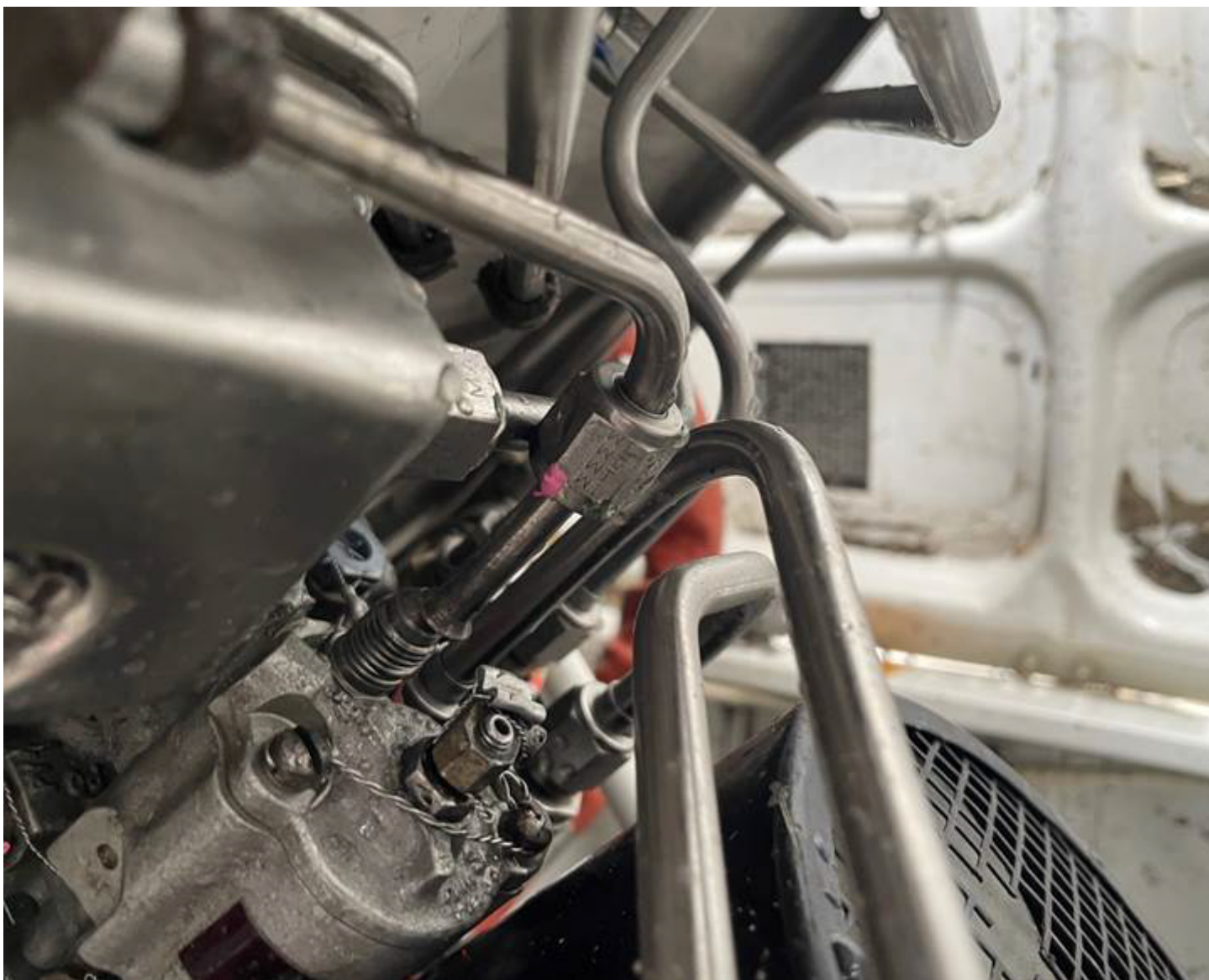
As far as today's activities, upon approval received yesterday, we orchestrated a recovery team to load the aircraft which took place at approximately 1200 today. The aircraft was hoisted onto a trailer with a boom truck, and while doing so the crew confirmed that the fuel system was intact with no leakage, and once upright confirmed that the aircraft had an estimated 150lbs on board. Upon safety loading the aircraft, it was transported to Carroll, IA and stored in Hangar 13 ([REDACTED] Carroll, IA 51401) awaiting further inspection.

The blades, tail section, and skid pieces were also collected and transported with the airframe. The fuselage was secured on wooden cribbing in the hangar, and the clamshells were re-secured in place. Once on site, we opened the left cowlings to visually inspect the engine bay, not touching any components or system, and to ensure there were no additional leaks observed.

For consideration in your investigation, please make note of the following observation:

During this visual observation, our Director of Maintenance noted a PC airline connecting the T on the governor to the fuel control was not attached via the b-nut which had backed away to the elbow of the line. The nut and threads had torque stripping matching the remaining intact stripes that were placed on after a fuel control change that occurred on 3/16. Following this fuel control replacement, the pilot and mechanic performed necessary leak checks and noted no anomalies. The mechanic performed torque-wrench adjustments on the required b-nuts of the system post-installation on 3/16, taking the nuts to between 55 and 80 lbs as indicated in the manual. The following morning post leak-checks, the torque stripes were applied. The pilot and mechanic narrative goes into additional detail about the pilots inspection of the system and the mechanics, however, it would be plausible that the b-nut in the image below, although installed and torque-striped, may have been inadvertently missed in the full torqueing of all nuts. The result of this line losing its integrity and reduction of airflow is deregulation of the engine and uncommanded roll to idle, which is what occurred.

Our mechanic Dan Murphy lives nearby, and it planning to meet with Luis and whomever else will be joining the debrief on Monday, just let us know if you'd like to start at the site, or the Carroll airport. Thank you again for all of your assistance as we go through these processes, and please call me anytime prior to Monday if necessary. Thank you.



Regards,

Seth L. Gunsauls
President

Winco Powerline Services – A Quanta Services Company

24/7 Dispatch: [REDACTED]

From: Gunsauls, Seth

Sent: Friday, March 18, 2022 9:49 AM

To: Sorensen Tim [REDACTED]; Abel, Jeremiah (FAA) [REDACTED]; Watkins, Robert (FAA) [REDACTED]

Cc: Konig, James (FAA) [REDACTED]; Hodges Michael [REDACTED]

Subject: RE: N500MZ ADAIR, IA / ENGINE FAILURE / 03/17/2022 / 1430 CDT

Thank you Tim – we will proceed accordingly and begin submittal of all data. Our crew is loading the airframe for transport and I'm en route to assist and meet with our customers. I'll issue hangar details in Carroll once secure, and our assigned Mechanic will lead any assessments in-person next week.

Seth

From: Sorensen Tim [REDACTED]
Sent: Friday, March 18, 2022 6:15 AM
To: Gunsauls, Seth [REDACTED]; Abel, Jeremiah (FAA) [REDACTED]; Watkins, Robert (FAA) [REDACTED]
Cc: Konig, James (FAA) [REDACTED]; Hodges Michael [REDACTED]
Subject: RE: N500MZ ADAIR, IA / ENGINE FAILURE / 03/17/2022 / 1430 CDT

[EXTERNAL]

Gentlemen,

This accident is being assigned to Mike Hodges within the NTSB central region. Mike is off today and will be back in the office on Monday. Continue to coordinate with me until he returns and can be briefed. As discussed yesterday, the helicopter may be recovered and secured until an examination can be scheduled. Please retain all maintenance documentation, photos, and statements until advised further. Should you have any questions or concerns, do not hesitate to let me know.

Respectfully,
Tim Sorensen

Tim Sorensen
NTSB – Aviation Safety / Central Region
West Chicago, IL
[REDACTED]

From: Gunsauls, Seth [REDACTED]
Sent: Thursday, March 17, 2022 7:15 PM
To: Abel, Jeremiah (FAA) [REDACTED]; Watkins, Robert (FAA) [REDACTED]
Cc: Konig, James (FAA) [REDACTED]; Sorensen Tim [REDACTED]; Hanson, Chad [REDACTED]; Walker, Trevor [REDACTED]; Powers, Justin [REDACTED]; Fisher, Stephanie [REDACTED]
Subject: RE: N500MZ ADAIR, IA / ENGINE FAILURE / 03/17/2022 / 1430 CDT

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Thank you, Jeremiah.

I've CC'd our Chief Pilot and DOM who will be travelling with me tomorrow morning to Iowa. We land in Omaha at 1242 so I hope to be on site by 1415. We will have company personnel at the site by 0900 to relieve the security guard we setup for this evening, and they will await our arrival. Once on site, I will call you to again confirm approval to pull blades and load, with the intent to relocate the aircraft to a hangar in Carroll, IA. Attached are 2 initial photos and I'll have the team feed you additional data, training records, and additional items tomorrow as I prepare the Accident Report while en route.

Thank you sir, I appreciate the support as we work through this.

Cell: [REDACTED]

Seth Gunsauls |

Winco, Inc. | [REDACTED] | Aurora, OR 97002

Cell: [REDACTED] | Main: [REDACTED]

Email: [REDACTED] | www.wincoservices.com

From: Abel, Jeremiah (FAA) [REDACTED]

Sent: Thursday, March 17, 2022 2:38 PM

To: Watkins, Robert (FAA) [REDACTED]

Cc: Konig, James (FAA) [REDACTED]; Gunsauls, Seth
[REDACTED]

Subject: N500MZ ADAIR, IA / ENGINE FAILURE / 03/17/2022 / 1430 CDT

Importance: High

[EXTERNAL]

Rob,

Per our conversation; the preliminary information is as follows. The ROC will be sending the -9 shortly.

- N500MZ / 1977 HUGHES / MD-500 was operating Part 133, conducting power line inspection services for WINCO INC near Adair, Iowa, when it experienced an engine failure at approximately 50 ft AGL. PIC attempted autorotation which resulted in hard landing, PIC suffered minor injuries and was evacuated to urgent care, aircraft received substantial damage; skid reportedly collapsed and tail boom suffered significant damage.
- Approximate location of accident in a field near [REDACTED] Adair, IA 50002; WINO INC has been given authorization to begin aircraft recovery process and will notify NTSB/ FAA of physical location when aircraft is secured.
- As there is substantial damage to the aircraft the NTSB expressed the intention of coordinating an engine teardown as part of their investigation.
 - NTSB POC: Tim Sorensen [REDACTED]; [REDACTED]
 - WINCO INC POC: Seth Gunsauls [REDACTED]; [REDACTED]

V/R

[REDACTED]

Jeremiah W. Abel

Aviation Safety

APAI, Flight Program Oversight CMU

[REDACTED]



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