

May 31, 2010

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Mr. Clancy,

On May 25th & 26th 2010, I performed Pre-Purchase Evaluations on Bell 430's, S/N's 49011 & 49012, owned and operated by Med-Trans Corporation. The inspections were conducted at the Morristown, TN airport & UT, Knoxville medical campus. The following findings were noted during the evaluations on each airframe:

N431UT, S/N 49011, airframe total time: 6126.8, airframe landings: 22143, # 1 engine, S/N 844025, total time: 5050.5, cycles: 10761, # 2 engine, S/N 844139, total time: 1564.7, cycles: 3554. At the time of the inspection, the original # 2 engine, S/N 844061, had been removed and was being sent to Keystone Engine Services for repair of a cracked compressor scroll; the installed # 2 engine was a Keystone loaner. The aircraft is currently operated on Med-Trans FAA Operating Certificate, M3XA227H and maintained under an FAA-approved AAIP and used in an EMS application. I was allowed access to the most current logbook, dated from February 20, 2010 to present, FAA Form 337's, Life-limited Historical Service Record Cards, Med-Trans Aircraft Status Sheet, AD Compliance & ASB Compliance Reports; records prior to 2-20-2010 were not available for review. The following items were noted during the evaluation of S/N 49011:

1. Power Assurance checks were performed on the engines with the following results: # 1 @ +10°, # 2 @ +23° (loaner).
2. A flight test was performed with satisfactory results with regard to the operation of the autopilot and a coupled, non-precision approach to the Moore-Murrell (MOR) airport using the Simplified Directional Facility (SDF) approach to RWY 05.
3. Airworthiness Directive, 99-23-03, which requires a recurrent 150 hour Vertical Fin attaching hardware torque check, is being accomplished under the AAIP, but is not be recorded as a repetitive Airworthiness Directive on the Aircraft Status Sheet or on the AD compliance sheet. The AD should be properly documented in the aircraft permanent records on a repetitive basis.
4. Airworthiness Directive, 09-08-03, Tail Rotor Blade Tip Weights, which supersedes 07-19-52, has not been complied with and recorded in the aircrafts' AD Compliance Sheet. Even though the installed tail rotor blades may not be affected by the AD, it should be signed-off and recorded in the aircraft permanent records.
5. The following Bell Alert Service Bulletins have not been complied with: ASB 430-09-42, One-time inspection of staked bearings in certain components & ASB 430-09-43, Revised Operating Limits (VNE Placards). On the aircrafts' ASB Listing, it was noted under the method of compliance that signoffs for ASB's 430-06-38 & 430-07-40 "Could not locate in logbooks". I would suggest that if there is no entry in the logbooks, that the ASB's should be complied with and properly documented.
6. In the # 1 engine logbook, it was noted that there was no sign-off for the accomplishment of AD 06-16-04, which required the installation of an upgraded fuel nozzle assembly, P/N 23077067. The AD references a Rolls Royce Alert Commercial Engine Bulletin, which had been accomplished on the engine, as the new style fuel nozzle has been installed. Additionally, the # 1 engine logbook does not show compliance with AD 06-20-07. This AD requires the establishment of historical service record cards for the power turbine 3rd & 4th stage wheel assemblies. These cards were not found in the engine logbook.
7. In the # 1 engine logbook, there were several FAA Form 337's that indicated major repairs for certain installed engine components from past engine repairs. These Form 337's have never been properly filled out and filed with the FAA.

8. An approximate 6" crack was discovered on the underside skin surface of the right-hand stub wing. This cracking has been noted as a problem with certain Bell 430's with wheeled gear. There is a Bell repair available for this cracking problem that strengthens the stub wing underside skin surface (see attached picture).
9. The sheet metal strap @ approximate fuselage station 340 was found to be cracked. This strap connects the main box beam to the tail pylon assembly (see attached picture).
10. The right-hand tire stop mount was found to be cracked (see attached picture).
11. The inside surface of both horizontal stabilizer auxiliary fins was found to have dents that appear to be consistent with damage from an aircraft washing brush.
12. It was noted that there had been a prior repair done to the left-hand Dzus receptacle rail, just under the center fairing and left air induction fairing. From past experience, this is another area of frequent repair, which Bell has an approved repair to splice in a new section of rail. As I was unable to review older records and could not find an FAA Form 337 for the repair, I would suggest a thorough review of the records for a logbook entry and to establish substantiation for the existing repair.
13. On the forward, center & both side air induction fairings, it was noted that there were bolts/nut plates installed, in addition to the standard Dzus fasteners for the fairings. The Dzus fastener straps have a tendency to wear into the composite fairings, allowing for the potential of the fairings to wear into the upper surface of the airframe structure. I understand that the additional bolt/nut plates were installed to help with this condition; the concern is that the change was properly documented along with substantiation for the change. The aircraft Form 337 records did not show any documentation for this modification.
14. The following major repairs were found to be accomplished and documented on FAA Form 337's:
 - a) Tail boom repair, left-hand side, just forward of the horizontal stabilizer,
 - b) Airframe repair on top of the left-hand side of the fuselage, under the fairing Dzus rail track, just above the opera window and cabin door (this repair is different than item 12, noted above) &
 - c) major repair on main beam, P/N 430-031-507-101, for right-hand stub wing mount, that was found broken at an earlier date.
15. The tail rotor gear box is due overhaul in approximately 365 hours.
16. The # 1 & # 2 oil cooler blowers are due overhaul in 675 & 728 hours respectively.
17. During the airframe life-limited components serial number checks, the following issues were discovered:
 - a) the main rotor swash plate, cyclic link assemblies, P/N 430-010-412-105/-106 were found to be not the ones installed by serial numbers. The Med-Trans status sheet shows S/N's RE-133 & RE-100 to be installed, but S/N's RE-307 & RE-346 were found to be installed. The swash plate HSR card had not been updated to show installation of the new links. These links have a 10,000 hour retirement life.
 - b) The tail rotor hub assembly, P/N 222-012-701-135FM & the tail rotor yoke assembly, P/N 222-012-702-113FM, did not have ID tags installed.
 - c) All main rotor pitch change links were missing ID tags. Additionally, it was noted that several sub-components of the M/R P/C Links, such as the universal bearings, had been changed, but the M/R P/C Links HSR cards did not reflect any of the sub-component changes. The most common sub-components changed on the M/R P/C Links are the universal bearings and the lower rod end assemblies; like the link assembly as a whole, these sub-components have a 10,000 hour life-limit and the HSR cards should reflect sub-component changes. The currently installed universal bearing S/N's are RX-21871, RX-21924, RX-21950 & RX-21965.
 - d) There was no HSR card found for the main rotor drive idler link assembly, P/N 430-010-409-105, S/N RE-23. This idler link is a sub-component of the drive link assembly, P/N 430-010-408-101, S/N RE-115.
 - e) It was noted that ASB 430-01-20 had been complied with on the main rotor swash plate assembly. This ASB installed an improved duplex bearing in the swash plate assembly, with re-identification of the swash plate outer ring P/N to 430-010-401-105FM from the -101. The outer ring had been re-identified, but the HSR card did not have an entry to show accomplishment of the ASB, nor was the outer ring P/N updated on the HSR card.
 - f) Pylon fluid (LIVE) mount, S/N LK-0071, HSR card does not show the most recent

accomplishment of the 2500 hour inspection, which requires replacement of the shear pad bolts. g) Pylon fluid mount, S/N LK-0102, had been removed from S/N 49012 and installed on S/N 49011. The unit total time was not figured correctly on the HSR card when the mount was moved from one airframe to the other airframe. Additionally, I would recommend a records research to determine when the 2500 hour inspection was last accomplished on the mount.

18. It was noted that the tail position light assembly was about to come off of the mounting area; this is critical due to its proximity to the tail rotor assembly.
19. The right-hand side of the engine forward firewall assembly had working rivets on the Dzus fastener receptacle bracket/upper strobe light A-frame assembly.
20. 2 of the 3 main rotor hydraulic servos were leaking; it is suggested that the leakage be checked against acceptable leak rates.
21. The copilots' side upper EFIS tube was very dim and hard to see during flight check.
22. The heater duct is broken in the left-hand chin window, under the copilots' left foot rest.
23. The lower firewall drain line was found cracked on the # 1 engine.
24. The copilots' and cabin emergency lights were inoperative.
25. Several switches in the overhead and instrument panels had inoperative lamps.
26. One fly-away kit was found in the facility in Morristown; it included covers for 1 airframe.
27. Aircraft has an Air Methods EMS interior installed under several STC's.

In summary, the aircraft was taken out of service during my visit due to the stub wing crack and the strap crack between the tail pylon and the main box beam. My assessment of the overall condition of the airframe is that it will require a fair amount of work to be presentable for auction or sale, both from a cosmetics viewpoint and from the need to thoroughly research and correct the many records issues.

N432UT, S/N 49012, airframe total time: 4958.8, airframe landings: 17472, # 1 engine total time: 4627.7, cycles: 10023, # 2 engine total time: 4570.8, cycles: 9390. The aircraft was located at the UT, Knoxville medical campus hangar facility. The aircraft was in an un-airworthy condition, with many components/parts removed to support A/C S/N 49011. The aircraft last flew on January 29, 2009. Records available for review were from September 28, 2008, to include the aircraft logbook, FAA Form 337's, AD, ASB & Technical Bulletins records, Life-limited Historical Record Cards, Med-Trans Aircraft Status Sheet; records prior to 9-28-2008 were available, but given the current condition of the aircraft, I felt it unnecessary at this time to review any older records. The aircraft was never placed on the Med-Trans Part 135 Operating Certificate; no significant scheduled maintenance has been performed on the aircraft since shortly after its last flight. I was unable to apply electrical power to the aircraft, due to the numerous missing components. I attempted to account for all of the missing components, as the components were located in both the UT Knoxville location, as well as at the Morristown airport facility. The following items were noted during the evaluation of S/N 49012:

1. The # 1 engine, S/N 844027, was not complete. The gearbox & compressor modules were installed in the airframe, while the power turbine module had been removed. The power turbine module had been removed for use on engine S/N 844061, installed in S/N 49011. The power turbine module from engine S/N 844061 needs to be sent out for overhaul & 1st, 2nd, 3rd & 4th stage wheels replacement (module located in Morristown facility). The fuel nozzle for the engine could not be located. The HMU for engine S/N 844027 requires overhaul.
2. The # 2 engine, S/N 844023, was not complete. The engine was removed from the airframe and was in a maintenance stand at the Knoxville facility. The engine consisted of the compressor and gearbox modules; the power turbine module had been removed to support A/C S/N 49011 in Morristown. The power turbine module is serviceable and can be reinstalled on engine S/N 844023. It was reported that the igniter plug was stuck in the combustion case boss. The HMU for the engine requires overhaul.

3. Med-Trans provided a list of parts/components/items that had been removed from 49012 for various reasons. I was able to account for all of those items, in addition to the following items:
 - a. The second HMU, which requires overhaul.
 - b. The second FADEC ECU, which was removed to support 49011.
 - c. The searchlight bulb was missing.
 - d. The lower & upper anti-collision light assemblies were missing.
 - e. The tail position light lens was missing.
 - f. One starter/generator could not be located.
 - g. Several components of the EMS interior had been removed.
 - h. Main Rotor Drive Plate Assembly, P/N 430-010-126-101, could not be located.
4. The following components are due overhaul in 41.2 hours:
 - a. Main Transmission.
 - b. Swash plate & Support Assembly.
5. The following components are due retirement in 41.2 hours:
 - a. Main Rotor Yoke Drive Bushings.
 - b. Main Rotor Yoke Attachment Bolts.
 - c. Hydraulic Actuator Support Assembly (changed during main transmission overhaul).
 - d. All boosted flight control bolts.
 - e. Tail Rotor Output Shaft.
6. Both engine fire bottles are due/overdue hydrostatic testing.
7. The horizontal stabilizer had been removed in anticipation of moving the airframe to the Morristown facility. The maintenance technician that removed the stabilizer suspected that the stabilizer had skin cracks emanating from several rivets. I believe that when the stabilizer is cleaned, it will be determined that the cracks are from the blistering of the paint and exhaust soot.
8. Airworthiness Directive, 99-23-03, which requires a recurrent 150 hour Vertical Fin attaching hardware torque check, is not to be recorded as a repetitive Airworthiness Directive on the Aircraft Status Sheet or on the AD compliance sheet. The AD should be properly documented in the aircraft permanent records on a repetitive basis.
9. Airworthiness Directive, 09-08-03, Tail Rotor Blade Tip Weights, which supersedes 07-19-52, has not been complied with and recorded in the aircraft's AD Compliance Sheet. Even though the installed tail rotor blades may not be affected by the AD, it should be signed-off and recorded in the aircraft permanent records.
10. The following Bell Alert Service Bulletins have not been complied with: ASB 430-09-42, One-time inspection of staked bearings in certain components & ASB 430-09-43, Revised Operating Limits (VNE Placards).
11. All main rotor pitch change links were missing ID tags. Additionally, it was noted that several sub-components of the M/R P/C Links, such as the universal bearings, had been changed, but the M/R P/C Links HSR cards did not reflect any of the sub-component changes. The most common sub-components changed on the M/R P/C Links are the universal bearings and the lower rod end assemblies; like the link assembly as a whole, these sub-components have a 10,000 hour life-limit and the HSR cards should reflect sub-component changes. The currently installed universal bearing S/N's are RX-19467, RX-20349, RX-20351 & RX-20356.
12. It was noted that ASB 430-01-20 had been complied with on the main rotor swash plate assembly. This ASB installed an improved duplex bearing in the swash plate assembly, with re-identification of the swash plate outer ring P/N to 430-010-401-105FM from the -101. The outer ring had been re-identified, but the HSR card did not have an entry to show accomplishment of the ASB, nor was the outer ring P/N updated on the HSR card.
13. While reviewing main rotor yoke assembly, S/N A-25, it was noted that shear restraint, S/N LK1218 is physically installed in the assembly, but the HSR card shows shear restraint S/N LK1215 installed.

14. On the forward, center & both side air induction fairings, it was noted that there were bolts/nut plates installed, in addition to the standard Dzus fasteners for the fairings. The Dzus fastener straps have a tendency to wear into the composite fairings, allowing for the potential of the fairings to wear into the upper surface of the airframe structure. I understand that the additional bolt/nut plates were installed to help with this condition; the concern is that the change was properly documented along with substantiation for the change. The aircraft Form 337 records did not show any documentation for this modification. (Same as 49011).
15. Maintenance Manuals in paper format were located in the aircraft baggage compartment. The on-site maintenance technician informed me that the manuals were not up to date. The RFM was not up to date (missing revision 18). A set of snow baffles were also located in the baggage compartment.
16. It was noted that there was a dent in the forward section of the right-hand stub wing additionally; the right-hand stub wing tip cap fiberglass was cracked/broken at the trailing edge.
17. Aircraft has an Air Methods EMS interior installed under several STC's.

In summary, S/N 49012 will require a considerable amount of work, time and money to be returned to an airworthy condition, taking into account the components that are currently removed, and the 5000 hour life-limited parts and component overhauls. Additionally, it will require a considerable amount of work to be presentable for sale or auction.

Respectfully,

Daniel Prince