

LOCAL 109 MEMBER

ACCIDENT REPORT CEN 15FA164

Summary :

On March 6, 2015, at 2310 Central Standard Time, an Airbus Helicopters (Eurocopter) EC-130-B4, N356AM, operated by Air Methods (doing business as ARCH), struck the edge of a hospital building and impacted its parking lot during a visual approach to the St Louis University Hospital elevated rooftop helipad (MO55), St Louis, Missouri. During the approach, the helicopter experienced a loss of directional control and entered an uncontrolled descent. The helicopter was destroyed by impact forces and a post-crash fire. The commercial pilot, who was the sole occupant, sustained fatal injuries. The helicopter was operated under Title 14 CFR Part 91 as an air medical positioning flight that was operating on a company flight plan. Night visual meteorological conditions prevailed at the time of the accident. The flight was returning to MO55 after it had been refueled at the operator's base in St. Louis, Missouri.

The flight's first approach and landing at MO55 was to drop off a medic, nurse, and a patient. During the approach, the pilot reported to the flight nurse and medic that winds were gusting to 25 knots. The flight nurse stated that helicopter was yawing quite a bit and there was a noticeable roll side to side during landing. The helicopter landed without incident during the first approach and landing. The flight then departed to obtain fuel at the operator's base and then departed to return to MO55, to pick up the medic and flight nurse.

The accident occurred during the return's approach for landing at MO55.

Examination of the wreckage confirmed flight control continuity of the tail rotor drive system and there were indications consistent with engine power on the turbine wheel output shaft.

Determination:

Barring any new data, forthcoming from the NTSB, it is the opinion of this member that the primary cause of the accident was a loss of control of the helicopter on approach. This was brought on by a loss of tail rotor effectiveness due to strong and gusting crosswinds and aggravated by settling with power. Which occurred first and exacerbated the other could not be determined. This resulted in the aircraft striking the side of an adjacent building.

Contributory factors were:

1. Inadequate data from Airbus Helicopters in the RFM about low speed handling characteristics of the EC 130.
2. Inadequate oversight and orientation of new hire pilots by AMC and or Base leadership, especially for those new to HAA.
3. No crash worthy fuel tank system resulting in a destructive fire.
4. Poor application of AMRM and ADM by pilot and crew.

Recommendations:

1: EC130 B4:

The EC 130 is a single engine helicopter designed by Airbus Helicopters. Primarily designed for the tour industry it has been modified for use in HAA operations. The unique design feature is the Fenestron (Fan in Fin) anti torque system. This necessitates a larger than normal vertical fin to house the Fenestron. Another unique feature of the EC 130 is that, unlike its predecessor the AS350, it does not have hydraulic boost to power the pitch change mechanism of the Fenestron. The pilot operates the anti torque pedals by a mechanical pull push system.

The EC 130 has an inherent handling problem. It does not handle well at low speeds (such as approach to and hover) with a cross wind or a tail wind. In fact, applying the Cooper Harper scale, under normal circumstances, the aircraft rates a qualitative score of about 4 or 5 but, in anything but a very low value (<4 knots) of cross wind or tail wind, the rating goes up to about 8. This is under normal load conditions. This fact is well known amongst EC 130 pilots, check airmen and, the representative from Airbus who is a qualified pilot. This member too is qualified and current on the 130 and is very aware of its idiosyncrasies, having experienced it firsthand in day to day HAA operations.

Airbus Helicopters certified the EC 130 under Part 27. Their verbal claim is that they met the certification criterion required for low speed handling in winds up to 17 knots. However, in stark contrast to other Part 27 certified helicopters, the EC 130 (and the AS350) has no limitations, or diagrams to indicate which would be the worst case scenario for winds at low speeds or at hover. This member obtained and forwarded to the NTSB, diagrams of wind envelope for the Bell 407, Agusta 119, and Bell 206. All, it should be noted, single engine helicopters and all in service with AMC and other operators for HAA. The EC 130 was not primarily designed for the HAA industry and HAA pilots are frequently required to make off airport landings. Indeed most hospital heliports HAA pilots operate to will not meet the Advisory Circular 150/5390-2C criteria laid down by the FAA. Single directional landings and departures are not an unusual occurrence to and from a number of rooftop or ground level hospital heliports. Given these facts, it puts the burden on Airbus helicopters to add significant data for safe operation of the EC 130 in crosswind conditions.

It is therefore recommended that Airbus Helicopters be prevailed upon to include, in the EC 130 RFM, data that will assist pilots in making safe decisions for crosswind or tail wind approaches and landings.

2: FDM Equipment and Crashworthy Fuel Tank:

This aircraft was not equipped with the FDM equipment which later models of AS350 and EC 130's come equipped with. It is Airbus' and AMC 's position that the FDM gear will assist in accident investigations. However, the representative of Airbus helicopters who was part of the team admitted to this member that even if the equipment had been on board this aircraft, it would have been destroyed by the ensuing fire. Furthermore, this aircraft did not have a crash worthy fuel tank. The resulting conflagration destroyed everything .This member is not qualified to comment on whether the final impact would have been survivable but, the ensuing fire certainly ensured the death of the pilot. If an FDM or any recording equipment cannot survive an accident, this member is at a loss to see what the much vaunted benefit of assisting in accident investigations is all about.

It is recommended that Airbus Helicopters be prevailed upon to harden the FDM equipment and to retrofit all their helicopters currently in service with a crash worthy fuel tank. AMC, on its part, being customers of Airbus, need to apply pressure to get their fleet of Airbus helicopters retrofitted with crash worthy tanks on an expedited basis.

3. Tail & Cross Wind Policy:

The AMC General Operations Manual in Section 2.6 states: 'Pilots shall comply with any wind limitation as listed in the aircraft flight manual'. This is useful for rotor stopping and starting but little else.

As seen from above the EC 130 has no such limitation laid down for low speed operations. The accident pilot may have been pushed into making the decision to return to the heliport (discussed later).The approach was to the east with as strong gusting southerly wind at his level. In such cases, a company policy written in the GOM for all aircraft ,laying down a wind limit for direct tail wind or a tail wind component or a cross wind would have assisted him in making the decision to either not return to the hospital or approach from another direction. A tail and cross wind policy is common practice amongst all Part 121 operators and should be standard for Part 135 helicopter operations, especially in the realm of HAA. This will arm pilots to use it for their risk assessment and also assist in explaining a disagreement to crew member inputs or suggestions. While this is still within the PICs decision making process, a new hire pilot or a relief pilot may not be as forceful to assert his authority. This was a factor in the accident chain as we shall see later.

It is recommended that AMC be requested to study the feasibility of putting a tail wind and cross wind limitation in the GOM across all aircraft types and, at a minimum, include it in the risk assessment criteria.

4. Pilot Hiring ,Orientation and Oversight:

As stated earlier Capt. Ron Rector was hired by AMC after he had worked at Blue Hawaiian Helicopters. He came into the company with 255 hours on type (EC 130). He was a former Army Aviator having flown Bell UH1 s and AH64 s in the Army.

From his training reports and conversations with the Check Airmen who trained him on the ground and in the air, it was apparent that his comfort level in the EC 130 was not commensurate with the experience he reported. Also, according to the interview with his surviving crew members, he was not very comfortable in single pilot HAA operations. He frequently second guessed and over thought his weather decisions, was prone to frustration and anxiety when operating in the high density, high workload area in and around the Class B airspace of St Louis. While this may not have had a direct impact on the accident, it speaks to the less than stellar oversight provided to a marginal pilot. By his own admission the Lead Pilot of the Warrenton base attested to these facts about Mr. Rector. The Lead Pilot also asserted that the orientation provided to Mr. Rector was in accordance with AMC procedures The Lead could not recall if Mr. Rector had been oriented to the St Louis University Hospital pad and the unique characteristics of the pad (discussed later).And, according to the crew, it was possible that Mr. Rector had not flown to SLU more than a couple of times before during his time at Warrenton.

Currently, AMC orientation procedure for a new hire pilot requires that the pilot sit in the back while an experienced pilot of that base flies the aircraft and introduces him to various hospitals and their approaches. This has to be done for 3 hours by day and 2 hours by night. After a successful completion of the orientation flights the new pilot is released for revenue flights. As a line and Lead pilot, it is this member's opinion that this procedure is not optimum, especially for single engine aircraft with no co pilot's seat. The new hire orientee does not get any useful handling experience with the aircraft or with the radio and navigation equipment in the aircraft. It leaves him to learn on the job while flying revenue trips with crew and passengers and can add to his already naturally elevated performance anxiety in the high profile, highly dynamic world of HAA. While Mr. Rector had been with the base for over a year, well past his probationary period, he was obviously not yet settled and comfortable in the job he had been hired to perform. According to the Lead pilot, this led to him being either too confrontational or to compliant with his crews. At some point the Lead and the next level of managers need to have stepped in to provide Mr. Rector a course correction and guidance to succeed at his job. That oversight seems to have been lacking.

It is recommended that AMC review its orientation procedures to allow new hires to first be released to fly non revenue flights, to get familiar with the aircraft, area of operations and day to day procedures whilst still under supervision ,before being released for line duties. Also, AMC needs to institute a performance review procedure, to be initiated by

the Lead pilot and the middle managers at the six month, one year and eighteen month mark of the new pilot's hire date.

5. ADM and AMRM :

It would be safe to say that in the case of this accident there were some gaps in the ADM by the pilot and some AMRM issues. Capt Rector could have broken the accident chain by not following the one direction approach only, as instituted by tribal knowledge of the Arch Air Medical Program. While the approaches to SLU helipad are restricted by tall spires to the south, a chimney to the north and the elevator shaft structure to the east, leaving the pilot only one way in and one way out from and to the west. Having experienced an unstable approach and rough landing in his first approach, the pilot could have elected to remain on the pad or remain at the Arch base after refueling and asked the crew to join him there by ground ambulance.

Apparently, that, according to other pilots in the program with whom this member communicated, was common practice. But, the crew advised otherwise and unfortunately, Capt Rector felt compelled to comply with their decision. The crew themselves were new hires and at this juncture, AMRM broke down completely. It is this member's opinion that had the crew not prevailed upon him to clear the pad and come back for them post refueling, the accident would never have occurred and Capt Rector would be still with us today.

It is recommended that AMC reinforce the AMRM concept to the crew about operational decisions being the purview of the PIC and not theirs. Also, PIC's need to be trained to be more forceful in their decisions and put safety above all considerations of crew convenience or other issues.

Conclusion:

Every accident is, in some form or other, due to pilot "error". After all, it is due to the acts of omission or commission by those tasked to fly that an aircraft ultimately crashes. Sometimes the circumstances leading to the accident are well out of the sphere of control of the pilot. But, for the most part, the pilot falls short in terms of skill or judgment and a crash results.

In the accident discussed here, it is fairly clear that a perfectly serviceable aircraft was mishandled and control was lost resulting, tragically, in the loss of the pilot's life. So, while this member agrees that the accident was caused primarily by pilot error, it is not as simple and conclusive as that. There is enough justification to look into the various issues highlighted above. I can unequivocally state that the manufacturer of the aircraft he flew the company that hired and trained him and his immediate supervisors had a role to play in the accident chain. The pilot was not reckless or careless or suicidal. He was just poorly equipped, technically and from a human factors perspective, to handle the situation he found himself in on the night of March 6th, 2015.

If any good has to come out of this tragic event and, if the untimely death of Capt Rector has to mean something, to facilitate change and enhance safety in our industry, both the manufacturers and the company need to delve deep into the recommendations above and make changes on an urgent basis.