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2001, just before Christmas, a dark night at Zurich Airport. The cold front had passed and patches of fog started to form under a cold and clear sky. Low visibility operations were imminent.

The crew of HB-VLV, a Cessna 560 Citation V business jet operated by Eagle Air, was preparing for their third and last flight of the day. They had landed at 19:31 LT and were scheduled to ferry the aircraft to their home base in Bern.

Due to the ATC restrictions imposed by deteriorating visibility conditions and the strict noise abatement considerations governing Zurich Airport operations, estimated departure time was delayed to about 22:00 LT.

While waiting, the co-pilot kept the right-hand engine running and the pilot was using a scraper to remove ice deposits from the left wing. Finally, at 21:56 LT the ground controller cleared the crew could taxi to RWY 34. At 22:05 LT they set take-off power for a rolling take off in meteorological visibility of 100m with partial fog for a direct flight to Bern as flight EAB 220.

The founder, owner and CEO, who on that night acted as operations

coordinator and flight dispatcher, had urged his crew to return the aircraft on the same evening to Eagle Air's home base at Berne airport. Since Berne airport closed at 22:00 LT, he had arranged for a special permission to extend the opening hours until 22:30 LT. Thus EAB 220 had to fly as quickly as possible to make the night curfew of Berne.

The pilot flying was probably the co-pilot. He was a free-lance pilot with around 1,000 flight hours experience and no training for night IMC take-offs. The commander was a former airline pilot with more experience in night IMC operations. During the take-off roll, the aircraft veered 10° right of the centerline due to asymmetric thrust caused by poor maintenance. Take off was uneventful. The pilot flying then ignored the noise abatement procedures by accelerating the aircraft only 13 seconds after becoming airborne.

Since the attitude indicator on the right side of the single-pilot designed aircraft was an electromechanical one, the co-pilot might have turned his head to monitor the commander's more precise electronic attitude director indicator. He might as well have become disorientated by the strobes glare in the fog. Or he simply wanted to accelerate as

fast as possible to make the approach restriction at destination.

To meet noise abatement procedures the aircraft should have climbed at a speed of 167 KIAS up to 4500 ft AMSL. In any case, he cleaned up the aircraft configuration and lowered the nose of the aircraft to 12° Attitude Nose Down.

The aircraft lost altitude and accelerated to 230 KIAS. At 22:07 LT the aircraft impacted the frozen ground still within the airport perimeter.

Wreckage and debris covered the area between the departure end of runway 34 and the threshold of runway 14. Both pilots perished.

Old School

Eagle Air was an operator with only two aircraft. The founder and owner occupied all major functions himself and governed his staff with an iron fist. His management style is described as authoritarian. He kept close telephone contact with the pilots during their duties, he would lay down specific instructions for their actions even during flying duties. When acting as a commander, he acted in a dominant and non-team oriented way.

Eagle Air was certified under Swiss national legislation. Although the Swiss Civil Aviation Authority (FOCA) had already implemented JAR-OPS 1 for major operators, small operators were still certified under the old national regulatory framework. Thus FOCA did not require Eagle Air to seek approval for low visibility operations, including low visibility take-offs.

As a non-JAR-OPS-1 operator, Eagle Air had not developed comprehensive standard operating procedures beyond the basic checklists supplied by the manufacturer and the external flight training provider.

Pilots had to rely on their own experience, since the company did not offer training to complement weaknesses in pilot skills and knowledge.

The company did not describe nor implement a comprehensive and clear concept for cooperation and implementation of procedures in the cockpit. There was no standardized method of working in the cockpit.

Were these the good old times?

AMATEUR
An absence of SOPs led to a Cessna 560 crash in 2001.

Modern Times

In today's modern times no operator should lack SOPs.

All commercial aircraft operators in Europe have established SOPs which not only detail the way in which crews work together in great detail, but which also cover a much broader spectrum of tasks.

A rolling take-off should not have been performed in the low visibility conditions prevailing at the time of the accident. A static take-off would have allowed the engines to spool up prior to break release which would have avoided the large thrust differential and subsequent directional change during the take-off roll.

The SOPs would also have prevented the crew from taking off with the strobes on in IMC and the potential for spatial disorientation resulting from the reflection of the strobes.

With SOPs it is also likely that better use of automation would have been made. Taking off in low visibility conditions at night is not the time to practice manual flying skills. By engaging the autopilot in the earliest moment possible the pilot flying would have freed up mental capacity to monitor the actual flight path.

Even many pro-active non-commercial operators have embraced SOPs, many driven by voluntarily seeking IS-BAO registration.

Safety First, as long as the boss is happy

Pilots are today very aware of the dangers of excessive commercial and time pressure. SOPs empower the pilots to give safety considerations precedence over non-safety related pressures they face in daily operations.

When pilots consistently apply SOPs over time, a culture of compliance becomes ingrained in the DNA of an operator. Deviations from SOPs are the exception, not the rule. Pilots are thus required to justify deviations from SOPs.

At Eagle Air such a culture was not in place. In fact: On the previous sector from East Midlands to Zurich the crew completed a loadsheet showing an actual take-off mass of 600 lbs above the maximum take-off mass. The commander reduced the excess to 400 lbs with a fictitious last-minute



change. Still the crew knowingly accepted the loadsheet.

Time and economic pressure probably led to this deviant behaviour. By taking additional fuel the crew avoided the time delay of re-fuelling in Zurich, as directed by the CEO. In addition, they avoided paying duty on the fuel for a domestic flight from Zurich to Berne.

Deviation had become a norm at Eagle Air, as far as this accident suggests.

Conclusion

The attitude of making the impossible possible often counteracts the habit of safe operation. A working day of making the impossible happen, for the sake of the company and even for some personal interests of the pilots, ended in failure.

Even the best company minded pilots fail in an impossible mission impossible.



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CRASH
HB VLV impacted the frozen ground within the airport perimeter at Berne airport.