DIFFERING EXPECTATIONS

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IMC NON-PRECISION APPROACH AFTER A LONG FLYING DAY

On 12 January 2011, during an NDB-DME Approach for runway 15 at Birmingham in IMC with weather close to minima the pilot of a TBM 850, N-850TV, landed without landing clearance and flew over a DHC-8-402 (Q400) which the tower had cleared to enter the runway and instructed to wait. This time nobody was injured. But it was a close call. (AAIB Bulletin: 10/2011)

How did this happen? At 8 NM from the threshold ATC cleared the TBM850 to "descend with the procedure". The pilot acknowledged. At 7 NM ATC instructed the pilot to contact the tower on 118.3 MHz. The pilot acknowledged the frequency change and switched frequencies on COM 1. He called the tower, but did not receive any response. He waited and attempted to call the tower a second time 30 seconds later. But again there was no response. He concluded that his radio had failed and continued the non-precision approach in IMC focusing on lateral tracking and on his vertical profile.

He had missed the final descent point at 6.7 NM and had started descent late at 4.7 NM from the threshold. Since he was 700 ft high at this point he reduced power and selected a vertical speed of 1,400 fpm. Airspeed remained high during the descent and even increased to 177 Kts.

The tower controller cleared the Q400 to line up on runway 15 ahead of the approaching TBM 850. The tower controller repeatedly tried to contact the TBM 850 during the final approach. He informed the Approach Radar and Director controllers who in turn also tried to reach the TBM 850 and transmitted blind go-around instructions. Unable to reach the TBM 850, and without knowing its intentions, the tower controller had no better options than to leave the Q400 on the runway extension.

The pilot of the TBM 850 was in IMC and broke cloud around 1.3 NM from the threshold at a height above threshold of 600 ft. He was visual with the runway at this point and proceeded to configure the aircraft for landing. The TBM 850 did not see the Q400 and flew over it before touching down within the touch-down zone 270 m from the displaced threshold. The pilot, most probably, would have seen the Q400 waiting on the runway, had the approach been stabilized. On vacating the runway he contacted Ground on COM 1 without difficulty.

It later turned out that the reason for the loss of communication was that the pilot had inadvertently not selected the assigned frequency on COM 1. Instead of 118.300 MHz the pilot of the TBM 850 had tuned COM 1 to 118.03 MHz, as the AAIB report states.

There were no injuries or fatalities in this incident and from the pilot's perspective he had acted correctly and safely. The occurrence had the potential for a very serious accident. Loss of communication in high density traffic environments can quickly lead to a loss of separation and the risk of collision on the ground or in mid-air.

The TBM 850 is a single-engine turbine powered aircraft certified for single pilot operation. The pilot had departed on a private flight from Voghera, Italy, at 08:43 hrs. En route he had stopped at Angers, France, and Antwerp, Belgium. The approach in Birmingham took place at 1535 hrs on the third leg of the day. In Birmingham the ILS for runway 15 was out of service due to planned maintenance and the NDB-DME approach for runway 15 was in use. This was published by NOTAM. Prior to the flight the pilot had not reviewed the NOTAMs for his intended route.

The approach was flown in IMC at high speed with a single crew member. Due to the loss of communication the TBM pilot was never cleared to land. Should he have executed a missed approach?

Once the pilot believed he had lost communications during the approach, he continued in line with ICAO Doc 4444 Procedures. Faced with a non-precision approach in IMC he followed the basic airmanship priorities: Aviate – Navigate – Communicate. He focused his attention on flying the aircraft and on finding the runway. And this he achieved successfully.

However he endangered both himself and others. The tower realized the loss of communication too late to stop the Q400 entering the active runway and had no time to prepare for a No-Radio (NORDO) aircraft landing.

Evaluating Alternatives

The alternative course of action would have been for the TBM850 pilot to execute a missed approach. Given the late initiation of a decent, the lack of configuration, the high descent rate and the high airspeed, the approach was not stabilized and this alone should have led to a go-around. Coupled with a loss of communication

the pilot was saturated and had no spare capacity to manage the safety of the flight effectively by evaluating alternative courses of actions and choosing the option with least risk.

Executing a missed approach would have given the pilot of the TBM 850 time: time to troubleshoot his COM 1 failure and time for ATC to understand the situation and prepare for a NORDO arrival.

After the go-around, the pilot would have had time to select his transponder to 7600, to troubleshoot his COM 1 failure including reviewing the frequency selected, attempting to establish contact on the previous frequency and performing the same on COM 2. He could also have attempted to establish contact emergency frequency 121.50.

Failure with Potentially Serious Consequences

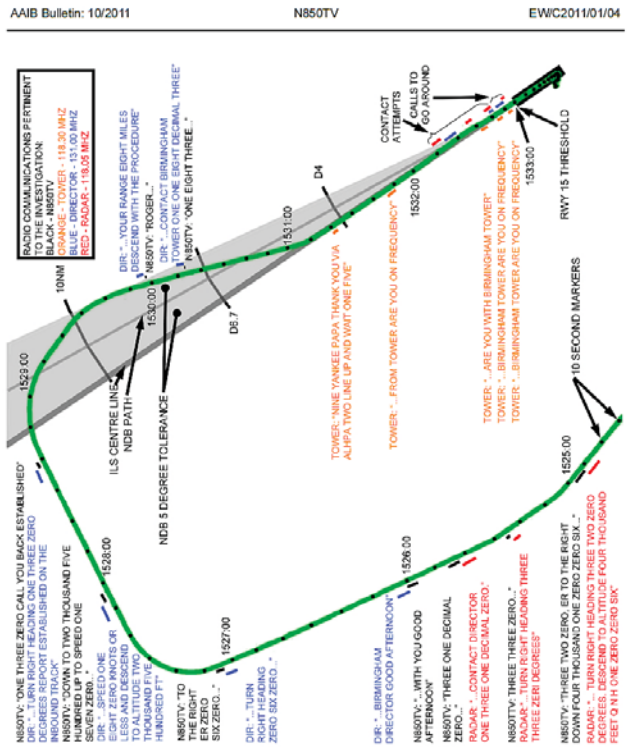
IFR traffic relies on communication with air traffic controllers to achieve safe separation from other aircraft. When the communication breaks down, safe separation is no longer assured. Hence both airborne and ground-based radio stations have an operational spare unit to cover isolated equipment failures. Despite this redundancy, loss of communication is not an infrequent occurrence. Although most loss of communication occurrences can be resolved quickly, instances of prolonged loss of communication (PLOC) still pose a hazard to flight safety. A recent Eurocontrol study of PLOC occurrences concluded that there are numerous reasons for PLOC. Human factors are the most common contributor to PLOC: roughly a fifth of PLOC occurrences are due to controller error, and almost half of them are due to crew error. Technical failures or abnormalities accounted for less than a third of all PLOC occurrences.

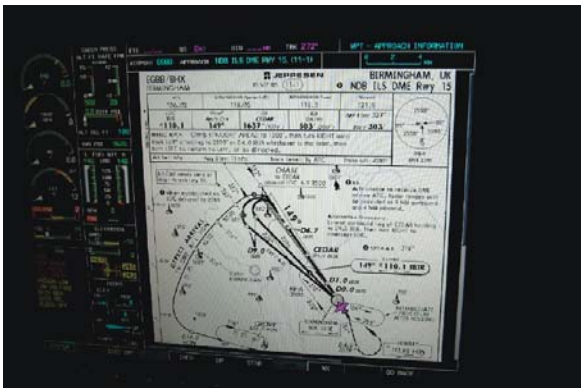
Dealing with Loss of Communications

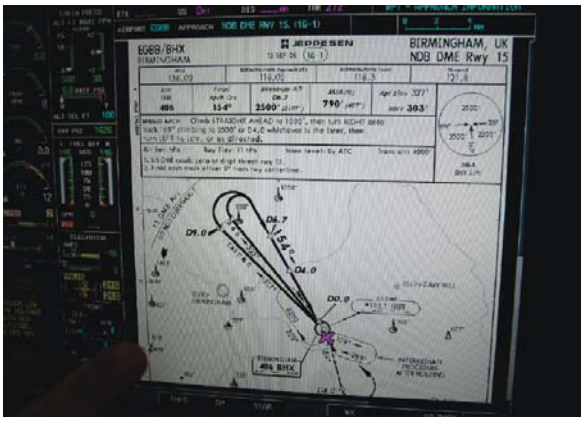
Suffering a loss of communication in IMC on an instrument flight plan is a very unpleasant event, at best - even more so when the aircraft is on approach or on a high flight workload, as there will be very little time to trouble shoot. Gaining time by abandoning the approach and following the published missed approach procedure is worth considering. In the case of Birmingham, a dedicated missed approach procedure for aircraft with lost communication was available.

Communication failure might occur in any of the various flight phases. In any of them the way out depends on the quality of preparation. Except when an escape into VMC is possible, all remedial procedures rely on accurate flight planning data, including communication failure missed approach procedures where available. Flight crews can help ensure safe and reliable radio communications by:

- ❍ Considering and correcting own handling errors before assuming a technical failure
- ❍ Following standard operating procedures when operating the radios
- ❍ Always maintaining a listening watch on the emergency frequency 121.5 MHz on COM 2
- ❍ Periodically checking their radios during long times of radio silence
- ❍ Reviewing and following radio communication failure procedures at the destination aerodrome
- ❍ Considering the consequences of one's own decisions on other stakeholders of the total aviation system







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