

CHAPTER 4.2 – RECOMMENDATIONS REGARDING GROUND PROXIMITY ALERT DEVICES

42.1 – Points on the Regulations Regarding the Carrying of a GPWS

As early as 20 February 1992 the Commission recommended that "French regulations should be amended as soon as possible to make it obligatory for air transport aircraft to carry a Ground Proximity Warning System (GPWS) under the same technical conditions as those laid out in paragraph 6.15 of Appendix 6 of the Chicago Convention."

Taking into account the decision made by the Minister on 24 February 1992 following this recommendation, in 1992 Air Inter has equipped its entire fleet with GPWS.

In addition, the order of 5 November 1987 relating to the conditions of using aircraft operated by an air transport company was modified by the order of 12 January 1993. The paragraph quoted below has been inserted:

"Any aircraft fitted with turbine engines, for 31 or more passengers, or having a certified maximum take-off weight greater than 15000 kg, must be equipped with a Ground Proximity Warning System. This device must be capable of generating alarms, warning of excessive proximity to the ground, an abnormally high rate of descent, a loss of altitude after take-off or Go-Around, and an abnormal deviation below a glidepath descent beam (glideslope).

The analysis carried out for paragraph 22.36 does not conclude that the presence of a GPWS on board would have made it possible to avoid the accident. However, it does show that statistically, carrying this equipment is beneficial, and that with modified procedures, it is very likely that the crew would have responded positively to the alarm.

The Commission of Investigation thus confirms its preliminary recommendation of 20 February 1992 quoted above.

42.2 – Training of crews; Concept of Air Traffic Procedures

Simulations carried out for the Investigation into the accident involving F-GGED showed that the aircraft's rate of advance is a decisive factor as regards the risk of untimely triggering of alarms, which can greatly reduce the crew's confidence in the system.

Certain controlled flights over the same landscape have led to accidents even though a GPWS was operating on board and it had given an early enough warning. Other incidents happened in which the GPWS had been taken out of service, either deliberately or because of a maintenance problem. This could be for various reasons: lack of interest in the system, distrust of false alarms, or the crew did not react immediately to an alarm because it went against the crew's understanding of the situation at a given time.

In addition to fitting the equipment, a series of measures should also be taken to define more clearly the instructions for operating the aircraft, to ensure that crews are trained as regards what action to take in the event of a false alarm, and to modify air traffic procedures by way of eliminating possible instances of false alarms.

Consequently, the Commission recommends:

- that airlines develop procedures for operating the aircraft and practical training tailored to Ground Proximity Warning Systems;**
- that in developing their procedures, air traffic organizations should take into account criteria for triggering alarms of on-board Ground Proximity Warning Systems, and that Instruction No. 20754/DNA should be amended accordingly.**

42.3 - Ground-based alarm system for excessive proximity to the terrain

A ground-based system born out of the MSAW (Minimum Safe Altitude Warning) concept and already in operation in some countries, is currently being studied in France. The purpose of this system is to permit the controlling body to inform the crew of an aircraft as early as possible if it is flying too low in relation to the terrain.

Putting such a system into effect should reduce the occurrence of "Controlled flights into the ground", since there would be more than one means of detecting dangerously low altitude relative to the terrain.

Consequently, the Commission of Investigation recommends:

- that a real effort should be made to conclude as soon as possible both the study and the implementation by air traffic services of a Below Minimum Altitude for Terrain ground-based detection system, wherever this is technically possible.**