

## Secretary of Aviation Report On Tenerife Crash

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### **KLM, B-747, PH-BUF and Pan Am B-747 N736 collision at Tenerife Airport Spain on 27 March 1977**

### **Report dated October 1978 released by the Secretary of Civil Aviation, Spain**

*Source: Aircraft Accident Digest (ICAO Circular 153-AN/56) page 22-68.*

#### **2.2 CONCLUSIONS**

From all of this it may be ascertained that the KLM 4805 captain, as soon as he heard the ATC clearance, decided to takeoff.

The fundamental cause of this accident was the fact that the KLM captain:

1. Took off without clearance.
2. Did not obey the "stand by for take-off" from the tower.
3. Did not interrupt take-off when Pan Am reported that they were still on the runway.
4. In reply to the flight engineer's query as to whether the Pan Am airplane had already left the runway, replied emphatically in the affirmative.

Now, how is it possible that a pilot with the technical capacity and experience of the captain, whose state of mind during the stopover at Tenerife seemed perfectly normal and correct, was able, a few minutes later, to commit a basic error in spite of all the warnings repeatedly addressed to him?

An explanation may be found in a series of factors which possibly contributed to the occurrence of the accident.

1. A growing feeling of tension as the problems for the captain continued to accumulate. He knew that, on account of the strictness in the Netherlands regarding the application of rules on the limitation of duty time, if he did not take off within a relatively short space of time he might have to interrupt the flight - with the consequent upset for his company and inconvenience for the passengers. Moreover, the weather conditions in the airport were getting rapidly worse, which meant that he would either have to take off under his minima or else wait for better conditions and run the risk of exceeding the aforementioned duty-time limit.

2. The special weather conditions in Tenerife must also be considered a factor in themselves. What frequently makes visibility difficult is not actually fog, whose density and therefore the visibility which it allows can be fairly accurately measured, but rather layers of low-lying clouds which are blown by the wind and therefore cause sudden and radical changes in visibility. The latter can be 0 m at certain moments and change to 500 m or 1 km in a short space of time, only to revert to practically zero a few moments later. These conditions undoubtedly make a pilot's decisions regarding take-off and landing operations much more difficult;
3. The fact that two transmissions took place at the same time. The "stand by for take-off ... I will call you" from the tower coincided with Pan Am's "we are still taxiing down the runway", which meant that the transmission was not received with all the clarity that might have been desired. The whistling sound which interfered with the communication lasted for about three seconds.

The following must also be considered factors which contributed to the accident:

Inadequate language. When the KLM co-pilot repeated the ATC clearance, he ended with the words, "we are now at take-off". The controller, who had not been asked for take-off clearance, and who consequently had not granted it, did not understand that they were taking off. The "O.K." from the tower, which preceded the "stand by for take-off" was likewise incorrect - although irrelevant in this case because take-off had already started about six and a half seconds before.

The fact that the Pan Am airplane had not left the runway at the third intersection. This airplane should, in fact, have consulted with the tower to find out whether the third intersection referred to was C-3 or C-4, if it had any doubts, and this it did not do. However, this was not very relevant either since the Pan Am airplane never reported the runway clear but, on the contrary, twice advised that it was taxiing on it.

Unusual traffic congestion which obliged the tower to carry out taxiing maneuvers which, although statutory, as in the case of having airplanes taxi on an active runway, are not standard and can be potentially dangerous.

Although contributing to the accident, the following occurrences must not be considered direct factors in it: the bomb incident in Las Palmas; the KLM refueling; the latter's take-off at reduced power; etc.