

RECOMMENDATIONS

Aircraft taking off with erroneous takeoff data cause hazardous situations that may lead to loss of aircraft or loss of life. A number of safety investigation reports, including those published by the Dutch Safety Board, have been written on this long standing and complex problem. These reports have led to recommendations to regulatory authorities, standardization bodies, aviation industry and airline operators to develop procedural, technical and operational safety improvements. These developments are ongoing and some of these improvements show the potential to adequately detect take off data input errors or insufficient take off performance; however, a comprehensive solution for this complex problem has not been developed and operationalized across the world wide air transport fleet yet.

Taking off with erroneous takeoff data is frequently a result of operational pressure when last minute changes take place during taxiing. To allow the crew more time to independently check and enter the changed data, it is advisable to stop the aircraft to perform these actions. This stationary moment should be considered as one of the key practices against preventing erroneous takeoff data entry. As this investigation has shown, this is already included in the procedures of several airlines. It has also been found that flight crew usually hold on to a derated takeoff and do not select full thrust if there is a suspicion that the takeoff roll does not develop as expected.

In addition to previous recommendations, the Dutch Safety Board therefore makes the following recommendations:

To the European Union Aviation Safety Agency (EASA):

To recommend to operators and their flight crews to allow for a stationary moment when calculating, checking and entering takeoff performance data in case of last minute changes and implement this advice as recommended practice in guidance material, Safety Information Bulletin 2016-02R1 and other safety promotion material.

To KLM Royal Dutch Airlines:

To implement the following measures to prevent crews from taking off with incorrect takeoff data:

- Calculate, check and enter changed takeoff performance data only when the aircraft is stationary.
- Develop a procedure to have flight crews prepare an alternative plan in advance and encourage the use of full thrust for when last minute changes occur.
- Train flight crews to take action if they suspect that the takeoff roll does not develop as expected; make this training an element of the recurrent training program.