



Safety Information Bulletin

Operations

SIB No.: 2017-20

Issued: 27 November 2017

Subject: Slow Rotation Take-off

Ref. Publications:

None.

Applicability:

Operators of 4-engine wide-body aeroplanes, approved training organisations (ATOs) providing relevant flight training, and their competent authorities.

Description:

The intent of this SIB is to raise awareness about a safety issue identified during an on-going investigation of a serious incident involving a 4-engine wide-body aeroplane. In this event, the aeroplane took-off from a limitative runway, near its maximum performance weight. The aeroplane needed a very long take-off run and, when passing the opposite runway threshold, was still below the minimum required height. The analysis of preliminary information gathered by the investigating authority, in cooperation with the affected operator and manufacturer, showed that slow aeroplane rotation rate was a main contributing factor to the event.

The preliminary findings of the investigation also highlighted that similar events had occurred at the same airport, involving another 4-engine wide-body aeroplane operator, and that slow rotation rates were applied in a significant number of take-offs.

Furthermore, the Agency identified one more event that occurred at another airport with a limitative runway, affecting a different type 4-engine wide-body aeroplane. As a consequence, pending the outcome of the full investigation, the Agency deems it appropriate to promptly address the issue of slow rotation rate on take-off in the abovementioned operational context.

Certification Aspects: Take-off performance for large transport aeroplanes is certified against CS-25 standards, which include various requirements regarding the parameters affecting take-off. During certification, take-off distances are established carrying out the manufacturer's recommended take-off procedure, which is described in the operational documentation. The application of the manufacturer take-off technique is fundamental to ensure that the required take-off performance is achieved (e.g. a take-off path with adequate clearance from obstacles).

Recommendation(s):

The Agency recommends operators of 4-engine wide-body aeroplanes, and ATOs providing relevant flight training, to assess whether their operating procedures may be affected by the identified safety issue. If so, they should apply their hazard identification and risk management processes, as follows:

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- identify whether slow rotation rate on take-off is a hazard in their operation (e.g. through the analysis of FDM, occurrence reports, training & checking activities);
- if a hazard is identified, assess the associated risks, in particular on airports with limitative runways; and
- if these risks are assessed as not acceptable, establish controls to mitigate the risks to an acceptable level. These controls may include the provision of ad-hoc training on rotation techniques based on aeroplane manufacturer's operational documentation. The unintended introduction of additional risks (e.g. tail strikes) should also be considered when analysing possible mitigating measures; the involvement of the manufacturer may be useful in determining such measures.

The Agency also recommends the relevant competent authorities to consider this SIB as part of the continuing oversight of applicable operators and ATOs.

The Agency will consider the need for additional actions that may be triggered from any further lesson learnt in the course of the investigation or the thorough analysis of the safety issue.

At this time, the safety concern described in this SIB does not warrant the issuance of an operational directive under Regulation (EU) [965/2012](#), Annex II, ARO.GEN.135(c).

Contact(s):

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