

Democratic Socialist Republic of Sri Lanka



Civil Aviation Authority of Sri Lanka

Implementing Standards

(Issued under Sec. 120, Civil Aviation Act No. 14 of 2010)

Title : Criteria to Regulate the Use of a Pavement by an Aircraft with ACN Higher than the Reported PCN (Overload Operations)

Reference No. : CA-IS-2014-ANS-005 **S.N. :** 032 **Date:** 11th August 2014

Pursuant to Sec. 120 of the Civil Aviation Act No. 14 of 2010, Director General of Civil Aviation shall have the power to issue, whenever he considers it necessary or appropriate to do so, such Implementing Standards as are required for the purpose of giving effect to any of the provisions of the Civil Aviation Act, any regulations or rules made thereunder including the Articles of the Convention on International Civil Aviation which are specified in the Schedule to the Act.

Accordingly, the undersigned being the Director General of Civil Aviation do hereby issue the Implementing Standards as mentioned in the Attachment hereto (Ref: CA-IS-2014-ANS-005-Att-01], for the purpose of giving effect to the provisions in the aforementioned Act and Standards & Procedures described under Article 37 of the Convention, which are specified in the Attachment.

These Implementing Standards shall come into force with immediate effect and remain in force unless revoked.

Attention is also drawn to sec. 103 of the Act, which states inter alia that failure to comply with Implementing Standard is an offence.

H.M.C. Nimalsiri
Director General of Civil Aviation and
Chief Executive Officer

Civil Aviation Authority of Sri Lanka
04, Hunupitiya Road
Colombo 02.

Enclosure: Attachment No. CA-IS-2014-ANS-005-Att-01

Implementing Standards

1. GENERAL

Title: Criteria to Regulate the Use of a Pavement by an Aircraft with ACN Higher than the Reported PCN (Overload Operations)

- i. This Implementing Standard (IS) provides guidance to aerodrome operators on establishing criteria to regulate the use of a pavement by an aircraft with an Aircraft Classification Number (ACN) higher than the Pavement Classification Number (PCN) reported for that pavement in accordance with Implementing Standard 30 (IS 30).
- ii. The requirements contained in this **IS** are applicable to Aerodrome Operators in Sri Lanka.
- iii. This document may be amended from time to time and the amendments will be issued in the form of new pages to replace the relevant pages of this document.

2. DESCRIPTION OF TERMS

Aircraft Classification Number (ACN) –

A number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category

Note: The aircraft classification number is calculated with respect to the centre of gravity (CG) position which yields the critical loading on the critical gear. Normally the aftmost CG position appropriate to the maximum gross apron (ramp) mass is used to calculate the ACN. In exceptional cases the forwardmost CG position may result in the nose gear loading being more critical.

Pavement Classification Number (PCN) –

A number expressing the bearing strength of a pavement for unrestricted operations

Flexible Pavement

Pavements designed and constructed using asphalt concrete placed on granular base and subbase of aggregate material or alternative composite material

Rigid Pavement

Pavements designed and constructed using cement concrete material and normally act as slab in load response conditions

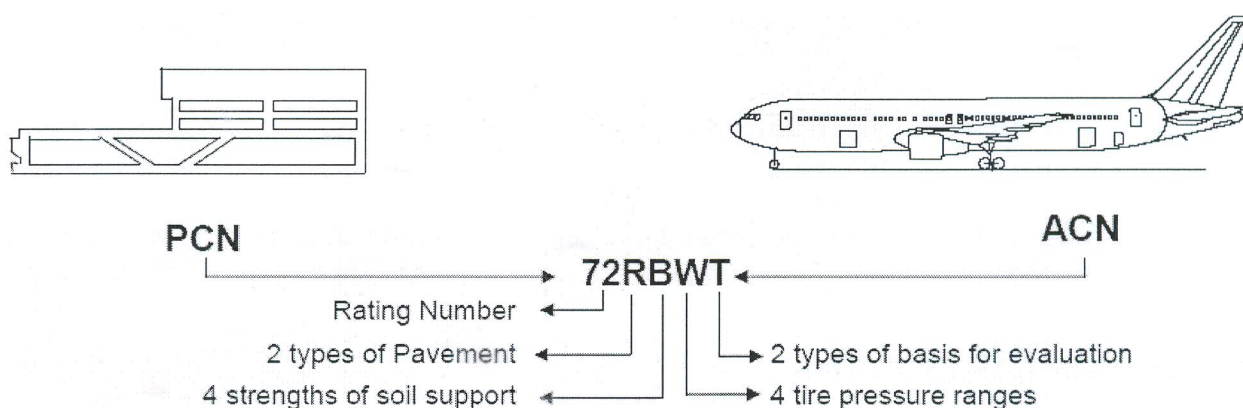
Composite Pavement

Pavements designed and constructed using both cement concrete material and bituminous mixtures and normally assumed to act rigid pavement

3. INTRODUCTION

a. Unrestricted Operations

The overload control is not applicable in case where ACN is less than the PCN provided for the pavement.



$ACN \leq PCN$ means Unrestricted MTOW

Refer IS30, 2.6 "Strength of Pavement" for above five factors Rating Number, Types of Pavement, Strength of soil support, tire pressure ranges and Types of evaluations

b. Method for Overload Operation Controls (restricted operations)

In essence, overloading of pavements can result either from loads too large, or from a substantially increased application rate, or both. Loads larger than the defined (design or evaluation) load shorten the design life, whilst smaller loads extend it. With the exception of massive overloading, pavements in their structural behavior are not subject to a particular limiting load above which they suddenly or catastrophically fail. Behavior is such that a pavement can sustain a definable load for an expected number of repetitions during its design life. As a result, occasional minor overloading is acceptable, when expedient, with only limited loss in pavement life expectancy and relatively small acceleration of pavement deterioration. For those operations in which magnitude of overload and/or the frequency of use do not justify a detailed analysis, the following criteria are suggested:

- a) for flexible pavements, occasional movements by aircraft with ACN not exceeding 10 per cent above the reported PCN should not adversely affect the pavement;

- b) for rigid or composite pavements, in which a rigid pavement layer provides a primary element of the structure, occasional movements by aircraft with ACN not exceeding 5 per cent above the reported PCN should not adversely affect the pavement;
- c) if the pavement structure is unknown, the 5 per cent limitation should apply; and
- d) the annual number of overload movements should not exceed approximately 5 per cent of the total annual aircraft movements
- e) Such overload movements should not normally be permitted on pavements exhibiting signs of distress or failure.

Furthermore, overloading should be avoided during periods of heavy storms, or when the strength of the pavement or its subgrade could be weakened by water. Where overload operations are conducted, the Aerodrome Operator should review the relevant pavement condition regularly, and should also review the criteria for overload operations periodically since excessive repetition of overloads can cause severe shortening of pavement life or require major rehabilitation of pavement.

c. Other alternative means of compliance

This Implementing Standard draws the attention to some information that can be used by aerodrome operators to aid in establishing such criteria using the ICAO standards and recommended practice. However different pavement overload criteria have been used by various Civil Aviation Administrations (please refer Doc 9157-AN/901 Part3). Aerodrome operator should adopt a criteria which is compatible with the pavement management system in place at the aerodrome.

4. OVERLOAD OPERATIONS

- 4.1 Section 20 of Attachment-A of Implementing Standard 30 contains some information on the ACN/PCN system including guidelines for overload operation.
- 4.2 However, the ICAO Doc 9157-AN/901 Part 3, Airport design manual, Part 3 Pavements, contains far more information on the subject, including background explanation as well as an insight in how several states have approached the subject. These are regarded as acceptable means of compliance to controlling overloading the pavements and are generally best practices in the industry which can be applied to ensure pavement preservation.
- 4.3 While the occasional marginal overload operation should not result in catastrophic damage, overload operations can affect the usable lifetime of a pavement. Significant overload operations may severely affect the lifetime of the pavement, and damage can occur, particularly with very new or already much worn pavements.

5. SUMMARY

The information contained in this documents should be used as basis for aerodrome operators to establish their system for control of overload operations and the necessary correlation with the aerodrome pavement maintenance programme.