



International Civil Aviation Organization

WORKING PAPER

A42-WP/601

TE/229

12/9/25

(Information paper)

English and Chinese only¹

ASSEMBLY — 42ND SESSION

TECHNICAL COMMISSION

Agenda Item 25: Other issues to be considered by the Technical Commission

IMPLEMENTATION OF EVALUATING THE AIRPORT PAVEMENT BEARING STRENGTH BY ACR-PCR SOFTWARE IN CHINA

(Presented by China)

EXECUTIVE SUMMARY

The Civil Aviation Administration of China (CAAC) has developed a software for evaluating pavement classification rating (PCR) using both technical and empirical methods based on the aircraft classification rating (ACR)-PCR method outlined in the *Aerodrome Design Manual* (Doc 9157), Part 3 – *Pavements*. This software allows for the rapid and accurate acquisition of pavement PCR evaluation parameters, featuring user-friendly operation and convenient calculations. Currently, the CAAC is utilizing this software to update the PCR of pavements at all civil airports and some general aviation airports in China, establishing a Chinese approach to pavement PCR calculation.

<i>Strategic Goals:</i>	This working paper relates to <i>Every Flight is Safe and Secure</i> .
<i>Financial implications:</i>	Nil for ICAO.
<i>References:</i>	

¹ English and Chinese versions provided by China.

1. INTRODUCTION

1.1 Overview of the Civil Aviation Administration of China (CAAC)-pavement classification rating (PCR) Calculation Software.

- a) The CAAC commissioned Tongji University to develop the CAAC-PCR calculation software to obtain PCR data for each airport more accurately and efficiently. The technical and empirical evaluations for rigid pavements and overlay pavements has been completed, and the flexible pavement PCR technical evaluation software is undergoing;
- b) The calculation software is based on the ICAO proposed method by considering the structural and traffic parameters of airport pavements to derive the PCR calculation. Results of the calculation includes PCR and the maximum allowable mass of the aircraft on pavements. The empirical evaluation results include PCR, overload operating conditions, and maximum allowable mass of the aircraft on pavements;
- c) Accuracy of the CAAC-PCR software is verified through forward design and reverse evaluation comparisons. As well as comparing the results with those obtained from FAARFIELD under different traffic loads and pavement structural conditions to determine the relationships between the results from the two methods.

2. DISCUSSION

2.1 Calculation Method of ACR:

- a) According to the calculation methods for aircraft ACR on rigid and flexible pavements described in the Aerodrome Design Manual (Doc 9157), Part 3 – Pavements, the aircraft classification rating (ACR) values for various aircraft types in the ACR-PCR method implemented by the CAAC are provided by aircraft manufacturers. The ACR values for different aircraft types are calculated and published by ICAO. The CAAC is willing to collaborate with member countries to improve current ACR calculation software provided by ICAO.
- b) ACR is a key parameter in the ACR-PCR method, as well as the basis for pavement PCR calculation, and it is also an indicator for ACR-PCR evaluations.

2.2 CAAC-PCR Calculation Software

- a) The CAAC is updating the PCR of pavements for all civil airports and some general aviation airports in China. The updated pavement PCR calculation results indicate that the evaluation results obtained using the ACR-PCR method are generally consistent with those obtained using the ACN-PCN method. However, the differences between ACR and PCR are generally smaller than those between ACN and PCN, suggesting that the ACR-PCR method provides more stringent evaluation results.



- b) The CAAC will continue work on the ACR-PCR technical evaluation methods for more complex and special pavement structure types, and develop the related calculation software, and improve it based on the existing ACR-PCR evaluation method.

— END —