ICAO

Doc 9911

Recommended Method for Computing Noise Contours Around Airports

Second Edition, 2018

Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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FOREWORD

This manual on the *Recommended Method for Computing Noise Contours Around Airports* (Doc 9911) replaces similar material contained in the *Recommended Method for Computing Noise Contours Around Airports* (Circular 205), which was approved by the ICAO Committee on Aviation Environmental Protection (CAEP) at its first meeting in 1986.

This first edition of Doc 9911 contains material developed by CAEP with the assistance of aviation stakeholders, including regulatory authorities, air traffic management providers, airport operators, manufacturers, airline associations and airlines, as well as the ICAO Secretariat. It was approved by CAEP at its seventh meeting in February 2007.

This manual is intended to assist States in the computation of noise contours around airports, using the most up-to-date procedures and the most recent aircraft noise and performance information available. It describes the major aspects of the calculation of noise contours for air traffic at an airport, including three ways in which most practical noise models calculate aeroplane single event noise levels.

This manual is an important advance on Circular 205 in that it is linked to an international aircraft noise and performance (ANP) database which is accessible online at http://www.aircraftnoisemodel.org. The methodology described in the manual is designed to make full use of this data source, which has been assembled over many years by aircraft manufacturers in collaboration with noise certification authorities and is fully endorsed by ICAO.

It is intended that this manual be kept up to date; future editions will be improved on the basis of work by CAEP and on comments and suggestions received from the users of the manual. Users are therefore invited to give their views, comments and suggestions on this edition, which should be directed to the Secretary General of ICAO.

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EXPLANATION OF TERMS AND SYMBOLS

DEFINITION OF TERMS

Note.— In keeping with established practice in the field of aeroplane noise modelling, the units of measurement used in this manual do not necessarily accord with the recommendations of ICAO Annex 5 — Units of Measurement to be Used in Air and Ground Operations.

When the following terms are used in this manual, they have the following meanings:

AIP. Aeronautical Information Publication.

Aeroplane configuration. The positions of slats, flaps and landing gear.

Aeroplane movement. An arrival, departure or other aeroplane action that affects noise exposure around an aerodrome.

Aeroplane noise and performance data. Data describing the acoustic and performance characteristics of different aeroplanes types that are required by the modelling process. They include noise-power-distance (NPD) relationships and information that allows engine thrust/power to be calculated as a function of the flight configuration. The data are usually supplied by the aeroplane manufacturer although when that is not possible it is sometimes obtained from other sources. When no data are available, it is usual to represent the aeroplane concerned by adapting data for a suitably similar aeroplane – this is referred to as substitution.

Altitude. Height above mean sea level.

ANP database. The international aircraft noise and performance database www.aircraftnoisemodel.org

A-weighted sound level, L_A. Basic sound/noise level scale used for measuring environmental noise including that from aeroplanes and on which most noise contour metrics are based.

Backbone ground track. A representative or nominal ground track which defines the centre of a swathe of tracks.

Baseline noise event level. The noise event level read from a noise-power-distance (NPD) database.

Brake release. Start-of-roll.

Corrected net thrust. At a given power setting (e.g. EPR or N1) net thrust falls with air density and thus with increasing aeroplane altitude; corrected net thrust is the value at sea level.

Cumulative sound/noise level. A decibel measure of the noise received over a specified period of time, at a point near an airport, from aeroplane traffic using normal operating conditions and flight paths. It is calculated by accumulating the event sound/noise levels occurring at that point.

Decibel sum or average. Sometimes referred to elsewhere as “energy” or “logarithmic” (as opposed to arithmetic) values. Used when it is appropriate to sum or average the underlying energy-like quantities, e.g. decibel sum.

Energy fraction, F. Ratio of sound energy received from a segment to energy received from infinite flight path.