

THE UTILITY OF AVIATION NOISE IMPACT ASSESSMENT STUDIES IN MANAGING AVIATION NOISE

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1. INTRODUCTION

This paper summarizes Aviation Noise Impact Assessment Study (ANIAS) procedures developed and used by the author and describes in general terms the value of these studies. The paper illustrates the utility and success of these studies in managing a wide-variety of aviation noise impacts. These studies can be performed by airport authorities and acoustical consultants, among others, for a wide variety of aviation noise impact applications and can complement other aviation noise management methods such as Noise Exposure Forecast analyses and noise control studies. ANIAS produce a comprehensive and factual account of actual aviation noise impacts, resulting in improved noise management to the benefit of all stakeholders.

2. METHODOLOGY

ANIAS are an interrogative noise management tool that address small-scale issues with sufficient application flexibility to address actual and specific conditions. Such a method provides necessary technical information to support decision-making about specific aviation noise impacts based on local conditions, and do so at a reasonable cost.

ANIAS can be used to describe both quantitatively and qualitatively the actual noise climate in the vicinity of the study area. This is accomplished through consultation and co-operation with the stakeholders, measurement, observation and research. Several types of analysis are performed to render the most comprehensive and accurate impact assessment possible. Analyses are tailored to produce information that will best address the objectives of each particular study. The following types of analyses can be performed:

Comparison of aviation noise levels (single events and dosages) with those of other common environmental and ambient noise sources in the study area; comparison of aviation noise levels with single event activity interference criteria; comparison of aviation noise levels with noise dosage criteria; investigation and explanation of the evoked

or potential community response (to help understand and respond to human response) and, suggestions for mitigation measures.

Quantitatively, ANIAS describe the actual noise climate in terms of single event (SEL and $L_{A_{Max}}$) impacts and noise dosage (L_{eq}) impacts. Representative measurements and calculations are made for all significant and typical noise sources. For both types of measures the impact of aviation noise is compared to that produced by the other noise sources. Furthermore, average single-event values are compared with activity interference criteria such as speech interference and sleep disturbance for both aviation and non-aviation noise sources. Average dosage values can be compared with provincial indoor and outdoor noise limits. Frequency analyses are also beneficial. Of particular use, is the real-time frequency analysis capability provided by some easily-portable measuring instruments.

Qualitatively, ANIAS can include an explanation of the frequency characteristics of the noise sources, their temporal variations and any pertinent contextual information. This information can be associated with the quantitative results and sociological findings to explain observed or potential human response and hence improve the impact assessment.

3. CONCLUSION

The ANIAS has proven itself to be a cost-effective, valuable and efficient analytical tool for TC planners, airport planners, managers and decision-makers (including local and regional authorities), in managing aviation noise. The methodology employed in these studies is flexible enough to be tailored to address the objectives of any specific noise impact assessment study and, is designed to yield results which can be directly used in noise management decision-making. A host of varied and self-explanatory reports have been written by TC which demonstrate the utility of Aviation Noise Assessment Studies. Copies of these reports are available from the author. A more detailed version of this paper is also available from the author.