

# AIRCRAFT NOISE INFORMATION FOR PUBLIC CONSUMPTION

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## 1. INTRODUCTION

Aircraft noise information has been traditionally presented to the public using tools that are not particularly suited for public consumption. These tools are mainly used to assist land use planners in designating the use of lands located near airports to achieve a level of use that is compatible with the noise from aviation activities at the airport. The principal tool is the Noise Exposure Forecast contouring system that produces contours that, when interpreted using social response information, predict public reaction to aircraft noise.

The Provinces of Ontario, Manitoba Alberta and the Northwest Territories have recognized the importance of protecting airports from incompatible land use and have legislatively adopted the requirement to pay due concern to an airport's noise contours when designating land uses near airports. Other provinces have encouraged local planners to pay heed to noise contours, some to a greater extent than others. Accordingly, in the whole of Canada, compatible land use near airports has been a relatively successful endeavour and this enables our aviation system to operate freely. Of course there are exceptions to the rule but nationally, the country is in good shape.

These logarithmally averaged sample traffic day contours have been successful for the purpose for which they were designed. Unfortunately they have are not designed to describe individual events or illustrate the noise effects of individual aircraft operations or indicate the effects of small numbers of flights that may be the cause of public concern.

The aviation noise management discipline has recognized the public information problem and is gradually coming to grips with this deficiency by developing a series of descriptors that are more easily understood by the non-expert.

The Australian government Department of Transportation and Regional Services has provided worldwide leadership in developing better methods of communicating aircraft noise information and this paper briefly describes their system and provides an insight into the public's reaction to it.

## 2. DISCUSSION

Land use planning contours have often been used by airport noise offices to discuss noise impacts of individual aircraft events. These contours are not suited for this purpose.

In the Canadian noise model, the Noise Exposure Forecast (NEF) system calculations included a penalty for night operations such that each operation occurring between the hours of 10:00 PM and 7:00 am are multiplied by a factor of 16.66 to account for sensitivities during nighttime hours. These operations are then included in the total summation of noise at an airport. When discussing individual noise events or particular aircraft overflights with the public and using the aforementioned contours for illustrative purposes, it becomes evident that the wrong tool is being used.

A misconception that results is that a resident whose house is located outside of a noise contour will not hear aircraft. This is further compounded, in some cases, by residents living on property that is outside of a contour who do not even expect to see aircraft over their neighbourhoods.

Selected flights from an airport may be required to follow flight paths different from that of the majority of departures from a particular runway. The noise effects of these flights may not be of sufficient magnitude to affect a contour due to the averaging provisions of the NEF program. Accordingly, relatively few flights may become the source irritation to many people and yet not be reflected in the contour. This phenomena serves to decrease the public's confidence in the airport's noise management program.

When new runways are being planned for an airport, an environmental assessment is required. Past experience has shown that the public views noise contours with suspicion. Decision makers, in many cases, are presented with noise contours and the information may conflict with what they are being told by the public.

There is a need to have all participants in the aviation noise question talking with the same knowledge and understanding. This will facilitate effective discussions and no doubt lead to better decisions in the final analysis.

## 3. METHOD

The majority of complaints expressed by the public are triggered by one event, a particularly noisy overflight that an individual resident finds irritating. This concern usually leads a complainant to other events causing irritation. Accordingly, to better discuss the event and the cause, a tool has been developed that is separate from the noise contours discussed above. It has the capability to deal with single events.

The process starts with the delineation and presentation of the flight paths of individual arrival or departure operations at the airport. Secondly, a threshold noise level that is significant for public reaction, usually 70 dBa is chosen. The 70 dBa single event contour for each aircraft type in use at the airport and its flight path is plotted. The 70 dBa level has been chosen because it has been determined that this is the level at which outdoor noise affects indoor speech in a standard Australian house with windows open. The results of this are then depicted pictorially on an aerial photo of the airport and its environs. Finally, the number of events that correlate with the flight path and single event contour are entered on the picture.

The result is that the public can easily see the noise level and the areas that are subject to it with the number of times it will occur on a typical day.

A second variation of this picture can include the airport's noise contour and permit a more informed explanation of the relationship between individual events and the logarithmically average noise.

Finally the information package can be tailored to meet the

needs of individual airports.

#### 4. RESULTS

The implementation of this system has allowed government officials and noise management professionals to enter into meaningful discussions with the public that lead to better understanding of all aspects of the noise problem.

The system is being publicized and has met with enthusiastic response. This enthusiasm comes from both the public that finally can understand what the noise manager is talking about and the noise management community that can develop a degree on understanding with the public.

International airports in North America and Europe have become acquainted with the system and are in the process of or have adopted all or parts of the information package.

The information package is enjoying success and the principles and facets are becoming the subject of study at the world level through the International Civil Aviation Organization.

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