

PRODUCT DATA

INM Link — Type 7834

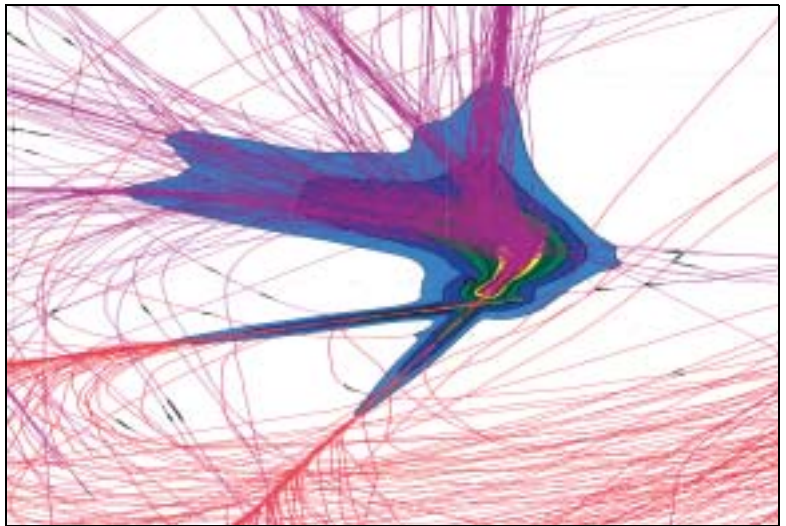
INM Link Type 7834 builds a bridge between two worlds: real measurements made by Brüel & Kjær's Airport Noise Monitoring System (ANM) and the Integrated Noise Model (INM) developed by the FAA. INM is the prediction tool most widely used by airports throughout the world. INM Link extracts the flight data collected by the ANM system and inputs it into the INM prediction program. It is possible to calculate a far more accurate noise contour map based on the real flight traffic at the airport rather than traditional maps based on simplistic information such as SIDs and STARs. INM Link offers a variety of data selection and integration options. The Flight Distribution Editor allows you to make simulations. For example, you can change the flight or runway parameters, change the flight mix or simulate the effect of increased traffic, special types of flight, or check-out the effect of moving traffic from one runway to another. And all based on real flight traffic data!

USES

- Calculates a realistic noise contour map based on the real flight traffic at the Airport
- Import all flight tracks into the INM prediction model, or divide the total flight into a number of mean tracks thus speeding up the calculations when generating a noise contour map in the INM program
- Use the Flight Distribution Editor to make fast simulations. Choose simplistic analysis modes to make simulations of the "what/if?" type

FEATURES

- Link between Brüel & Kjær's Airport Noise Monitoring System and the Federal Aviation Administration's Integrated Noise Model, version 6.1
- 32-bit software running under Microsoft® Windows NT®, Windows® 2000 and Windows® XP



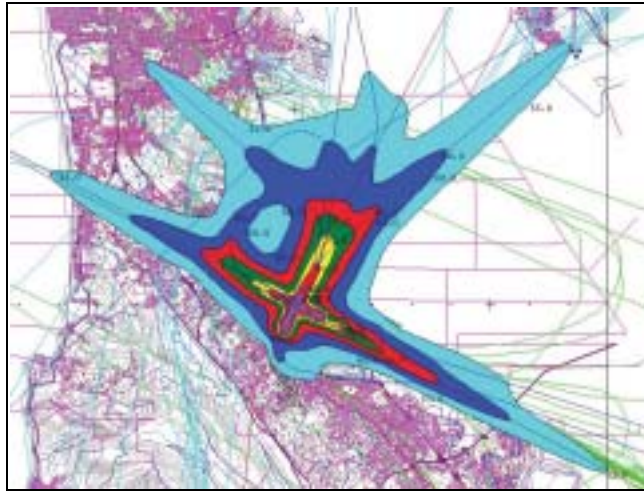
Introduction

The American Federal Aviation Administration has developed the Integrated Noise Model (INM) for evaluating the environmental effect of aircraft noise in the vicinity of airports. INM has many analytical uses. These include:

- Assessing the noise impact resulting from new or extended runways or runway configurations
- Assessing new traffic demands and fleet mix
- Evaluating revised routing and airspace structures
- Assessing alternative flight profiles or modifications to other operational procedures

The INM model has become the prediction program most widely used at airports all over the world. It is used to predict the impact of noise in the vicinity of airports. As input parameters, the model uses flight track information, aircraft fleet mix, standard and user-defined aircraft profiles and terrain. The INM model produces noise exposure contours that are used for land-use compatibility maps.

Fig. 1
Noise Contour Map
generated in the INM
model

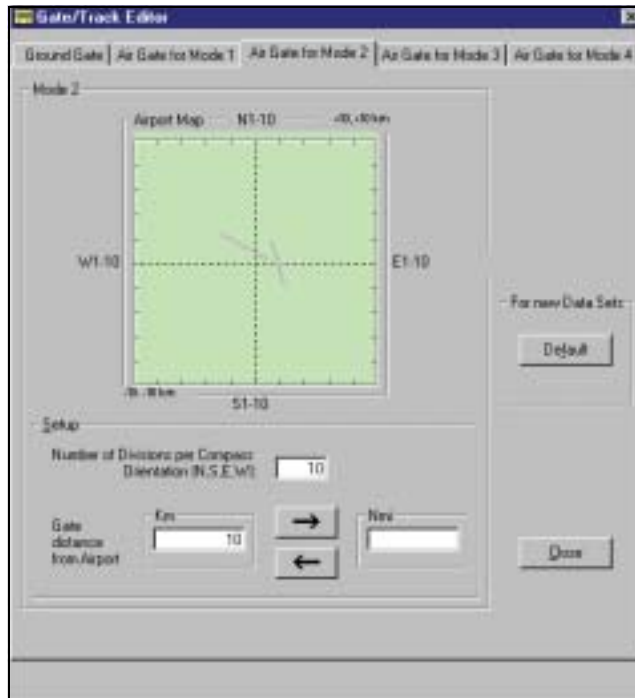


INM Link Type 7834 is used to transfer existing data from the Flight Tracking Software (part of an Airport Noise Monitoring System) to a set of three input files that can be used by the INM model.

Choose Analysis Mode

Input files for INM can be created in four different modes; from the most detailed description of the flight traffic to a faster, but less precise, description. In the following pages, these choices are referred to as analysis 'modes'.

Fig. 2
Mode 2. Ten Air Gates
per compass orientation
will be used as mean
tracks



Mode 1

The INM program is used to show a picture of the actual noise. This means that every flight is taken into account as each event has its own flight track. In this mode, modelling is not practical due to the large number of flight tracks.

Mode 2

In the event of a longer investigation time, such as weeks, months or years, the number of input data can be overwhelming for the INM program. Data reduction is therefore necessary as the data tends to be more of a statistical nature than actual events. In such a situation, 'mean' tracks are calculated on the basis of where tracks penetrate a definable part of a line north, south, east or west of the airport.

Mode 3

Mean tracks are calculated, based on SID/STAR information. A definable number of sub-tracks are selected too, with the help of standard deviation.

Mode 4

Count the number of events, using the different SIDs/STARs. The same set of Flight Data can be analysed using one or more of the above-mentioned modes, or using different versions of them. The data for each of the analyses can be stored in its own Data Set.

Create Data Files (Data Set)

There are three steps in the process of generating a set of data files.

1. Choose the correct set up for the data set (Data Set Properties)
2. Extract flight data from the database (Get Flight Data)
3. Create INM data files

Data Set Properties

Firstly, choose the analysis mode. Also enter the setup parameters, e.g., time definition periods (Day/Evening/Night).

Get Flight Data

The next step is to select data from the ANM system. Next, change the data so that they can be used for the four different modes, and then save them in temporary files in the selected Data Set. Data can be added to these files continuously. This lets you select data with different criteria or add data day by day, month by month, etc.

Fig. 3
Get Flight Data window. Select time period and use the Criteria field to enter additional search criteria

The screenshot shows the 'Get Flight Data' window with the following sections:

- Weekday:** Radio buttons for All, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday. 'All' is selected.
- Selection:** 'From:' 20000126 and 'To:' 20020126.
- Criteria:** An empty text field.
- Fields, SQL Commands, Logical Operators:** Three empty dropdown menus.
- Selected Flight Data - Only data from first day:** A table with columns ID, START TIME, OPERATION, AIRCRAFT, and a checkbox. It contains 15 rows of flight data.
- Buttons:** View Details, Automatic Generation of Data, Clear Generated Data, Add to Generated Data, Create INM Data, and Close.
- Generated Data:** A table with columns DATE, WEEKDAY, and CRITERIA. It shows one row: 20000126, All, RUNWAY+KIDCD.
- Number of Operations:** A section with checkboxes for Departure, Arrival, Both, and Other, each with a numeric input field.
- Generated Operations:** A section with checkboxes for Runway, Gate Air 2, and SID/Star, each with a numeric input field.

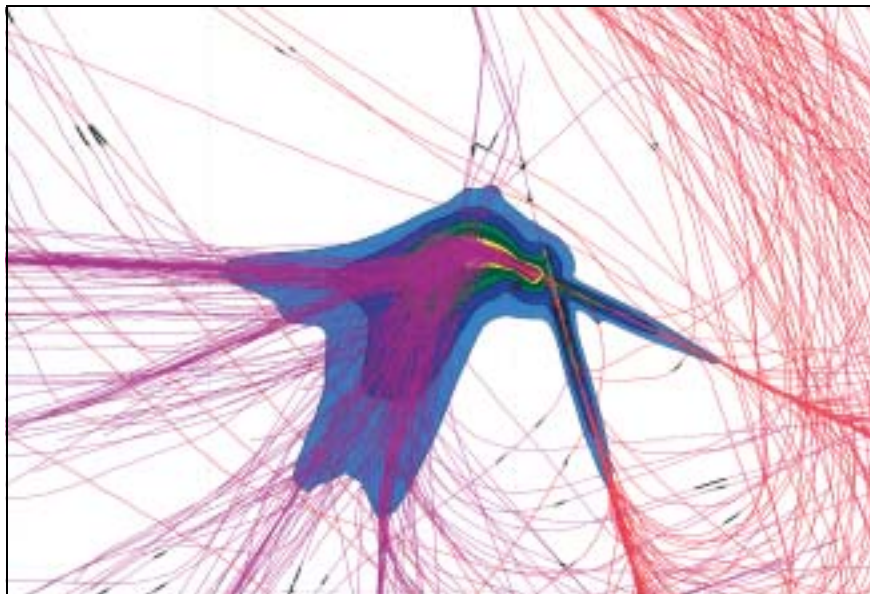
Create INM Data

When all the required operations are recorded and displayed in the Existing Data table, you can create the final input files for the INM program. The three input files (*Ops_flt.dbf*, *File_Track.dbf* and *Trk_seg.dbf*) are stored in the Data Set directory and, at the same time, copied to the selected INM Case Directory.

Export

The INM Link program handles the export of noise contours and gates to Type 7804 Airport Noise Monitoring System as well as to Microsoft® Excel.

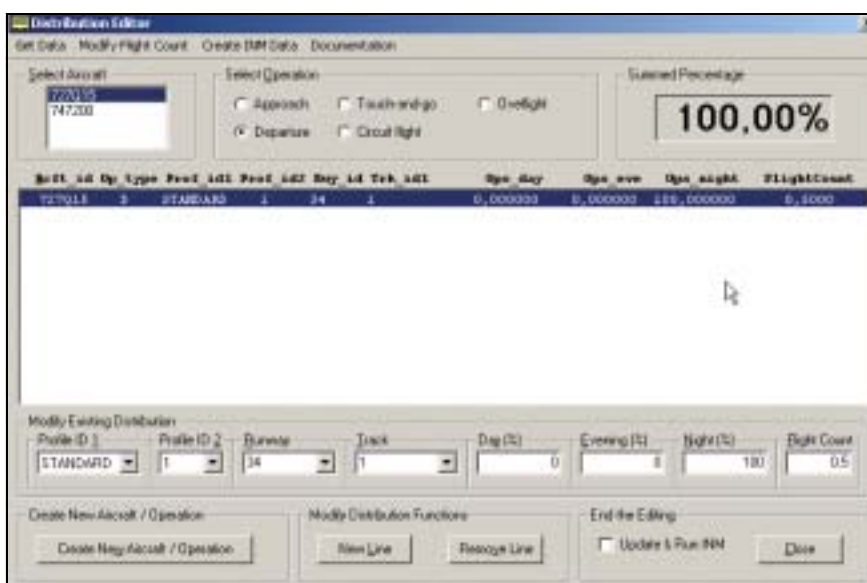
Fig. 4
INM Calculation based on the selected flight tracks and using analysis mode 1 (all flight tracks are included in the study)



Distribution Editor

Distribution Analysis is a powerful tool for displaying and/or modifying Flight Data from the INM Study directory. After modification, the data are re-stored, and a new INM analysis can be performed.

Fig. 5
Distribution Editor window



There are two steps in the process of changing Flight Operation Data:

1. Select Aircraft and/or Operation (Types of movements, etc.) – upper part of the screen
2. Modify selected Aircraft's and/or Operation – lower part of the screen

Select Aircraft and/or Operation (Types of movements, etc.)

It is possible to select one or more of the aircraft created in INM or exported to INM from the Airport Noise Monitoring system's database. It is also possible to select different types of operations:

- Arrival
- Departure
- Touch-and-go
- Circuit flight
- Overflight

Modify Selected Flights

A list box shows, line by line, the data for the selected aircraft and operation in step 1. When one of the lines in this list is selected, the data are transferred to the “Modify Existing Distribution” area of the display for modification. It is possible to modify all flight details:

- Profile Group
- Profile Stage
- Runway
- Track
- Day, Evening, Night
- Flight Count

Adjust the choices to match the situation at the airport and then update the database. After the adjustments have been completed, run the INM model to see how the changes affect the noise contour map.

Specifications — INM Link Type 7834

Input Requirements

Data files stored in Flight Tracking Software Option Type 7804

Output Format

The following files will be generated for each study: Ops_ftt.dbf, Track.dbf, Trk_seg.dbf

Output Destination

Selectable INM study

Platform

32-bit software running under Windows NT®, Windows® 2000 and Windows® XP

Recommended Computer

No special requirements. However, if studies with combinations of long analysis periods based on Analysis Mode 1 are required, a fast computer significantly reduces the analysis time

Ordering Information

Type 7834 INM Link, English

TRADEMARKS

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