

## **THE ESTABLISHMENT OF AIRPORT NOISE MONITORING SYSTEM FOR SUBANG KUALA LUMPUR INTERNATIONAL AIRPORT, MALAYSIA**

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### **1. INTRODUCTION**

The idea for the establishment of an airport noise monitoring system for Subang Kuala Lumpur International Airport was first conceived in 1988. The proposal was put forward after several studies carried out by the Department of Environment Malaysia indicate that there are serious aircraft noise problem affecting residents in close proximity of the airport.

An extensive study carried out in 1991 indicated that a proposal to expand the airport by means of putting another runway parallel to the existing one was found to be very difficult due to encroachment of development, particularly residential, close to the airport perimeter. If the plan was to go ahead, several noise sensitive establishments had to be demolished and several thousand people would have to be relocated elsewhere. Furthermore, the additional runway will result in tremendous increase in the number of aircraft operations, which in turn will expose a greater number of people to the aircraft noise nuisance.

### **2. BACKGROUND**

Subang Kuala Lumpur International Airport is the primary international airport in Malaysia. It is located about 20 miles from Kuala Lumpur City. In 1995, it handled more than 12.5 million passengers and 325,870,713 kgs. of cargo, with 140,685 aircraft movements. It has a single runway, aligned at 15/33, and three (3) terminals each handling international, regional and domestic air traffic. The airport was opened in 1963 and has had several expansion programs to accommodate the ever increasing demand of air travel. It is the home base of Malaysia Airlines System (MAS), the national carrier. Subang Airport also caters for several foreign airlines, totalling 46 in 1995.

### 3. PROJECT PROPOSAL

In order to have a better understanding of the actual noise problem at Subang Airport, the Department of Environment under the Ministry of Science, Technology and the Environment Malaysia, came out with a proposal to establish an airport noise monitoring system for Subang airport. The fund for the project was sought from the Federal Government under the Sixth Malaysia Plan Budget (1991-1995).

A technical committee comprising various agencies involved in aircraft and airport noise management was established to give the necessary input and advise to the Department of Environment in establishing the system. The agencies involved among others, were Ministry of Transport, Department of Civil Aviation, Malaysia Airport Berhad, Telekom Malaysia Berhad, Tenaga Nasional Berhad, and Malaysia Airlines System (MAS).

Detailed field investigation carried out suggests that a total of eight (8) fixed noise monitoring terminals (NMTs) are required to be installed in the vicinity of Subang Airport (Figure 1). One mobile unit is also acquired to carry out short-term measurements, as and when the need arises, such as when there are several complaints against aircraft noise coming from an area away from the fixed NMTs.

### 4. THE AIRPORT NOISE MONITORING SYSTEM (ANMS)

After a thorough investigation on various systems available in the market at that particular period (early 90's), Bruel and Kjaer's Airport Noise Monitoring System, based on Modular Monitoring System (MMS), was found to be the best option in meeting the objectives and the budget allocation. The Noise and Track Monitoring System will indicate the noise level emitted by a particular aircraft, at that particular time, using a specific runway. This will ensure that each departing or landing aircraft will conform to the yet to be established noise limits at the airport.

The system consists of eight (8) Noise Monitoring Terminals (NMT). Each noise monitoring terminal is made up of a weatherproof microphone unit (conforming to IEC 651 Type 1 and ANSI S1.4 Type 1), a noise level analyzer, a weather station and a modem, housed in a weatherproof cabinet. The NMTs are connected through modems via public telephone lines to the Central Processing Unit (CPU) which is located at the Headquarters of the Department of Environment, Wisma Sime Darby, Kuala Lumpur.

There are three different softwares installed in the CPU at DOE. The standard software (7618) is a complete noise monitoring system for systems with noise only requirements. The system software (7632), which links to 7618, provides historical and real-time meteorological data. Correlation between noise and meteorological data is done automatically. Data is collected via a data-logging unit (UA 1220). The system software 7633 reads in-flight tracks from Radar and Flight Information Capture (RAFIC) computer and displays the track on selected map with altitude and transponder codes. The 7633 will also show the real-time traffic situation, replay of selected single track and replay of traffic situation for a

selected period. This enables the software to correlate flight track and registered noise events. The 7633 can also handle operational data like Flight Information Display Service (FIDS) or flight strips.

Information regarding flight information is supplied by the airport radar, which is being interfaced with the RAFIC computer housed at Terminal 3, Subang Airport. The RAFIC software consists of two parts: one standard part for data buffering and communication, and the other for communication with the radar system, which is designed solely for Subang Airport. The RAFIC computer is able to listen to three RS 232 lines at the same time. It can receive data from the airport radar (x, y, altitude, transponder), receive flight information data (flight no., aircraft type), and also communicates with the MMS computer.

The system also consists of a complaint software which allows any complaint against aircraft noise lodged by affected resident to be dealt with efficiently. The Noise Monitoring and Flight Tracking system can detect the particular aircraft in question and the problem will be investigated, and the complainant will be informed of the result of the investigation. The Noise Monitoring and Flight Tracking System configuration is shown in Figure 2.

## **5. EXPECTED BENEFITS**

By embarking on this project, the Department of Environment expects to gather continuous and up-to-date noise situation at Subang Airport. Noise contour can then be developed and a system of noise zoning can be established around the airport.

Data from the aircraft noise monitoring activities will be used in developing airport/aircraft noise control for Malaysia. This will ensure that aircraft movements will result in a minimal amount of nuisance to the community residing in close proximity of airports.

The experience of Subang will be very beneficial in the light of the new Kuala Lumpur International Airport currently under construction at Sepang, which in due course will replace Subang as the number one gateway to Malaysia.

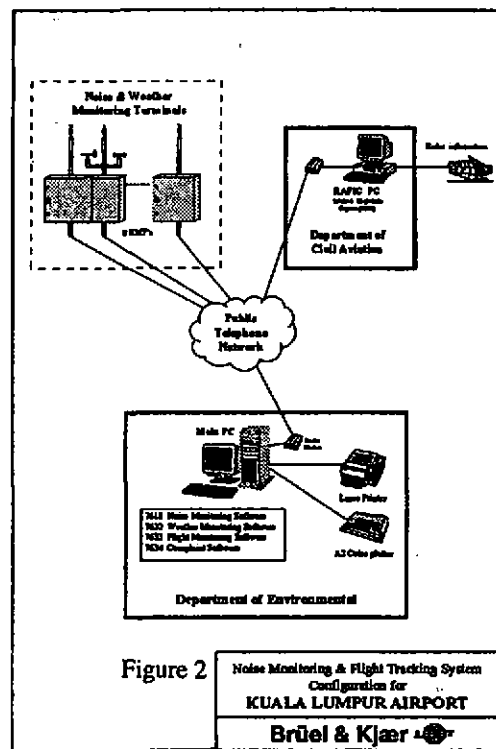


Figure 1 Kuala Lumpur International Airport

