MEASURES AVAILABLE TO THE AIRPORT MANAGEMENT FOR THE REDUCTION OF THE BIRD STRIKE RISK.

1. INTRODUCTION.

There is sufficient statistical evidence that bird strikes impose significant repair cost upon airlines and that bird strikes may cause severe damage even to large transport aircraft.

The intention of this document is to collect and publish information about methods available for the reduction of bird strike risks on and around airports.

To what extent a specific measure will prove successful at a given airport depends on the local conditions and this paper does consequently not recommend specific measures, but concentrates on giving information about the different measures.

The paper is limited to measures which may be taken on and around airports. It does not deal with such items as radar-observations, forecasting of migration, problems relating to aircraft structures etc.

This paper may be used as a source of information, and it may be used as a comprehensive list of the different measures available.

The different measures available may be grouped together as set out below:

- Measures aiming at creating an environment hostile to the birds at or around the airport.
- Measures based upon the active scaring away of birds.
- Measures based upon the reduction of the number of birds.

2. INVESTIGATION OF THE BIRD POPULATION ON AND AROUND THE AIRPORT.

Before the application of different measures can be decided upon it is necessary to have sufficient knowledge of the different bird species staying on and around the airport.

Such information may be obtained through reports from airlines about bird strikes and through the collection of dead birds from the runway areas.

Further information may have to be obtained through observations and countings in the field.

3. MEASURES AIMING AT CREATING AN ENVIRONMENT HOSTILE TO THE BIRDS AT OR AROUND AIRPORTS.

3.1 Use of chemicals to make the soil of the airport unattractive to birds.

As such chemicals may affect the water supply and sewage systems, the chemicals considered should be carefully studied before applied.

Such chemicals may be used in order to make the soil unattractive to the birds. This type of chemicals are only used at very few airports and the success seems to be very limited.

Chemicals may also be used to kill plants or insects which serve as food for the birds. This application of chemicals is found at a number of airports,and the method seems to be successful provided the necessary considerations are given to the local conditions.

3.2 Control of trees and bushes at or around airports.

There is sufficient evidence that certain kinds of trees and bushes are attracting birds. If situated near the runways such trees and bushes may increase the bird strike risks.

Trees and bushes at the airport may be removed by decision of the Airport Authority. It should, however, be born in mind that areas with trees in certain cases serve as noise- and smell protection for dwellings near the airport. With the increase of the public pressure against noise and smell from airports it is likely that a number of airports will establish wood-areas in order to protect critical dwelling zones. It is recommended that due consideration is given to the bird strike problem, when such protective wood-areas are considered.

While trees and bushes at the airport may be controlled by the airport authority, the situation is different for areas outside the airport boundary. The aviation authorities are in most cases only able to have trees and bushes removed which penetrate the obstacle limit surfaces. When obstacle restriction considerations are not applicable, the only possibility seems in most cases to be a voluntary agreement with the owner of the land in question.

3.3 Control of the length of the grass along the runways.

The general opinion is that a grass length of 15-20 cm will in most cases prevent birds from staying in the area. The optimum grass length should, however, be decided with due consideration to the local environment.

In areas close to runways and taxiways it may not be possible to accept the recommended grass length. The reasons why the grass in these areas have to be kept very short, are danger of fire and in order to avoid that lights and signs are covered by grass.

3.4 Control of agricultural activities.

Agricultural activities, especially such as plowing and harvesting, may attract large flocks of birds, which are highly undesirable in the vicinity of airports.

Agricultural activities at the airport may be controlled by the Airport Authority and today a large number of airports have stopped their agricultural activities in order to reduce the bird strike risk. Outside the airport area the Airport Authority has in most cases little or no possibility for controlling agricultural activities. The two possibilities left open will in most cases be either to buy the land or to reach an agreement of the land owners, which may require substantial monetary compensations.

3.5 Possibilities for control of different activities outside the airport boundary.

A number of activities in the areas around airports may increase the number of birds and the bird strike risk. Among the more important activities may be mentioned:

Garbage dumps.
Sanctuaries.
Racing of Homing Pigeons.

The possibility of influencing garbage dumbs and sanctuaries is a matter of national legislation. In some countries the "Aeronautics Act" provides for the enforced removal of such facilities, but in most cases the only possibility is negotiations with the authorities involved.

Racing of homing pigeons near airports may in some countries be controlled through provisions in the "Aeronautics Act", but in most cases the only possibility left open is negotiations with the local "Homing Pigeons' association", which may have some influence on its members. One recommendation which such an association may pass on to their members, is to keep the pigeons away from the airport by suitable feeding. It has been indicated by biologists that there is a possibility to feed pigeons in such a way that they do not need to forage in the open to be able to cover the need for the different nutrience.

4. MEASURES BASED UPON THE ACTIVE SCARING AWAY OF BIRDS.

The measures classified in this group are such as Acoustical scaring devices, Pyrotechnique scaring equipment and shooting of birds at the airport.

4.1 Acoustical scaring.

These devices are in most cases mounted on vehicles, but they may be fixed installations. The most common system will via a tape recorder and a loud speaker system transmit distress calls from relevant bird spices. The method has proved effective at several airports when used

together with other measures. The method may be based upon the transmission of ultrasonic sound, which is a technique being investigated at some airports. The efficiency of this method has not yet been proved.

4.2 Pyrotechnical Scaring Equipment.

A typical equipment is the shell cracker which is designed to project a small bomb which explodes at the end of the trajectory. The explosion may be combined with the development of smoke. When shell crackers are used, care should be taken to avoid any danger of fire. Other possibilities are Verey pistols, shot guns and flashing lights. Generally speaking these methods seem to be useful especially when combined with acoustical scaring.

Falconry has been used with some success at a limited number of airports. The method is difficult to apply, because the falcon species applicable are rare and protected and because falconry requires specially trained people.

The disposal of dead birds or models of dead birds have been used at some airports. In the case of dead birds the method only seems to be effective as long as the corpses are fresh.

A limited shooting of birds seems to be a successful method when applied together with other methods. A number of bird species are protected during parts of the year or throughout the year. It is considered important that airports obtain the approval from the appropriate authorities to shoot also such birds when they are considered dangerous to aviation.

5. MEASURES BASED UPON THE REDUCTION OF THE NUMBER OF BIRDS.

To achieve a significant reduction of the bird strike risk through a reduction of the number of birds, is in most cases, considering the difficulties involved, not possible.

There are, however, a few important exceptions from this general rule. When a large number of birds are breeding in a limited area, it may be possible to destroy the eggs and by this reduce the size of the next generation.