KLM Royal Dutch Airlines

INFORMATION TO PILOTS ABOUT THE DANGER OF BIRDSTRIKES

SLIDES		SLIDES
1.L NIL		1.R NIL
2.L KLM Flight support Services presents "Birdhazard to civil aircraft"	MUSIC Birds, birds, birds Birds have already been flying for 35 million years	2.R This presentation is solely meant to inform pilots of the potential danger of bird-strikes.
3.L Flocks of geese	BIRD NOISE	3.R Single tern
4.L Single egret	and after evolution the bird became	4.R great snowy egrets
5.L Prehistoric birds	one of the most beautiful sights in nature.	5.R tern with fish
6.L Old ac	Ever since flight became reality, birds have been recognized as a potential hazard to the safe operation of aircraft.	6.R Birds+ac
	In 1912 the first birdstrike was recorded, and when the speed of aircraft increased and with the coming of turbine-engined aircraft in the 1950's, a number of factors that posed new problems were suddenly introduced.	7.R Drawning
7.L SPL final Transa.+ birds	Collisions of aircraft with birds became more frequent.	8.R ONA crash
	Since 1955 there have been more than 80 known crashes of civil and military aircraft with about 140 deaths which have been attributed to birdstrikes.	

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8.L TO DC-10

Nearly 80% of all birdstrikes take place either during take-off or landing and nearly all strikes on take-off and landing occur below 2500 feet.

9.R TO 747

The take-off phase is the most dangerous phase of operation. During this phase a birdstrike could lead to the most severe consequences, Because:

Firstly there is practically possibility for avoiding action.

And secondly max. T.O. power will create max. ingestion possibility.

9.L Jet engine

The left hand slide shows a jet engine from a B 747. The fan was severely damaged, followed by a titanium fire. This was all caused by a birdstrike during T.O..

The damage costs were almost one million dollars.

10.L Fan blades

The slide on your right also shows birdstrike damage to the fan of a B 747 engine occurring during T.O.. This resulted in an explosion in the high pressure compressor, as shown by arrows.

10.R compr. expl. with arrows

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11.R
Graph
(5 sec)

The slide shows the number of KLM birdstrikes worldwide from 1975 to 1978
As can be seen, 1977 was the worst year and the costs to KLM were $2.000.000.

11.L
Flocks of birds

The bird population of the world is estimated to contain more than 8000 different species.
Of these the Giant Canadian Goose is one of the largest

12.R
Can. Geese

The estimated world population of birds is about hundred thousand million.
For Great Britain alone there are about 120 million birds and Northern America about 6 thousand million.

Migration

13.R
North Amer.
blow up

12.L
Migration
chart Eur.

In the northern hemisphere many birds migrate in spring from their southerly wintering areas to northerly breeding areas - and return in autumn.
The routes followed by different kinds of birds are shown on these maps.
Large scale weather situations will influence bird migration.

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The peak migratory seasons for most birds occur between March and Mid April for the spring season and between mid-September and November for the fall. October accounts for the highest single birdstrike month.

13.L
Migr. chart
North/South
America

Migration can be observed day and night by Radar and is reported by so called BIRDTAMS. This photograph of a radar screen taken on the eastern coast of the USA, shows the night migration of appr. 2 mill. song birds. Certain birds as swans, geese, cranes and ducks are known to migrate at reasonable altitudes of 5000 feet and even up to 20.000 feet.

14.L
Radar

14.L
Airport
oblique

What can be done to reduce bird strikes? Environmental management is one of the best answers. Airports and their immediate surroundings are very attractive to the bird population. They like to nest in shrubs and grass, forage in garbage dumps and are attracted to swamps and trees.
The environment of every airport has to be investigated and studied with regard to the local bird problem

15.R
Airport
oblique

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This includes the different kinds of birds involved and their particular habits.
The main objective is to reduce the attractiveness of airports for birds.

15.L
Garbage dump

Garbage dumps must be removed.
There are special regulations for grasslands which specify the length of the grass.

16.L
Grass or agriculture near airport

Different kind of birds are attracted to different lengths of grass.
Regulations concerning agricultural land near airports are important, as they control the kind of crop that may be grown. Control over wastland, woods and lakes around the airport is necessary to prevent favourable conditions for birds.

16.R
Grass on airport

17.R
agriculture near runway

17.L NIL

BIRD DISPERSAL METHODS

18.L
Shell crackers

There are several methods for dispersing and driving off birds.
Pyrotechnic devices such as firecrackers, flares and Shell crackers.
Shell crackers, shown on the left, can be fired from a shotgun or a Very pistol.

18.R
Van with equipment

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Sometimes it is necessary to use live ammunation to kill the occasional bird but many birds are protected by the law.

19.L NIL

Gas Cannons

19.R gas cannon

Several gas cannons can be placed along the live runway. Birds that are used to being hunted may consider this noise as indicating danger and leave the area.

20.L Day-glow mills

20R Model hawk

Two devices to scare birds are shown here; The day-glow mill on the left revolves and the model hawk waves in the wind. Dead or models of dead birds are useful to scare other birds. This device also spins in the wind, and gives the appearance of a white hawk flapping its wings up and down. Apparently it does not scare this hawk.

21.L Model bird

21R Hawk on device

Distress calls of birds recorded on magnetic tapes and played back through a loudspeaker as seen on this bird patrolcar are often used near runways.

22.R Car + loud speaker

22.L captured bird

BIRD DISTRESS CALL (10 secs)

23.L Cage + buzzard

Many protected birds such as buzzards, hawks and crows can be captured and removed more than 40 miles from the airport. These, then, are some of the more important bird dispersal methods which can be used by the airport authorities.

23R NIL

24R AP + birds don't mix

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More and more operators are responding to the fact that the best deterrent to birdstrikes is awareness of the problem and the alertness to the potential danger.

24.L
AC on final + land lights

And now, what action can pilots take?

1. Below 10.000 ft KLM pilots have to reduce speed and switch on their landing lights. The reduced speed means that impact damage from a bird strike will be less.

25R
AC on final - landing ligh

The switching on of the landing lights is as much to let the birds see you as to let the other aircraft see you.

2. Pilots have to be alert to the fact that when a runway is suddenly changed, it may not have been checked by the birdpatrol.

25.L
Briefing item

3. Pilots are also twice a year informed by Briefing item about migrating birds. This is interesting enough for you to read it now.

(20 secs)

BIRD NOISES

26R
Birds in th air pilots beware!

Pilots are strongly adviced:

26.L Text

1. To report the presence of birds on the airport, and near and on the runway; this is to enable the authorities to achieve the necessary action:

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2. To report to the local ATC any birdstrike or the presence of birds near the aircraft at any time.

27R ICAO-BSRF

27.L Text

3. To fill in an ICAO birdstrike report form.

28R NIL

Pilots have to be aware that;

1. The presence of birds in the take-off or landing path should require the use of a different runway.
   A delay might have to be taken while the bird patrol disperse the birds.

2. Pilots have to realise the possible risk of damage when taking off from a runway, that is newly in use.

29R Duck cockpit window

3. When birds are present the consequences must be considered.

30R bird puffin.

28.L birds terns

MUSIC

31R birds + helicopter.

29L DC-9 Oyster-catchers

32R Falcon + end

AMS/OL/BA
22-11-'79