BIRD CONTROL –WHAT NEW TECHNOLOGIES AIRPORTS SHOULD BE CONSIDERING IN TERNS OF BIRDSTRIKE AVOIDANCE.

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INTRODUCTION

When a pilot is told by Air Traffic Control that they are “clear to take off, or land” the Controller is making a statement that, to the best of their knowledge, through runway inspections, the use of Surface Movement Radar, if available, bird runs, FOD inspection etc. the runway is clear of objects which could interfere with the safe take-off and landing of his aircraft.

We know that debris on a runway can cause catastrophic damage to an aircraft as sadly seen with Concorde and that similar crashes have resulted from birdstrikes, especially if a flock of birds is encountered.

Birds on an airfield should be considered as FOD and the same effort should be applied to their detection and removal. In most cases, reliance is placed on eyesight and vigilance of ground staff to adopt Best Practice.

Can this working practice be improved, assisted by the latest technologies?

ADVANCED TECHNOLOGIES HELP

Airports are necessarily large, flat and open areas and detection distances of well over a kilometre are not unusual. If reliance is placed on fixed point observations, such as from the Control Tower, can we be sure of detecting even a flock of something the size of house brick or smaller, in all weather conditions at such a distance? All too often we have shown that we cannot, but technology exists to improve this.

SAFETY MANAGEMENT

Aviation Safety must consider the ongoing evolution of interactive science, technologies and methodology.
An Integrated Bird Management System is just part of that evolution: a stated Safety Management Policy that, when implemented, is designed to reduce the attractions for birds on an airport and then to disperse those birds that persist by bio-acoustic and other means.
An Integrated Bird Management System is a ‘best practice” policy which will achieve maximum effect in keeping airports as free as possible from the danger of a birdstrike from hazardous species.
Others in the business of contributing to the implementation of an overall airport safety policy will have specialist expertise in their own domain and will include, amongst others, land and grass management, lighting and signage, foreign object debris detection, surface friction testing.
Integrated Management Systems have been proven to be effective in reducing the risk of damage from birdstrikes and the same principles can be applied to FOD detection and prevention. In both, control of the problem involves two basic functions; detection of the object or bird(s) and their removal.

Although the latter is labour intensive, the detection can be enhanced by the constant operation of the latest generation of surface scanning radars that can equally detect a 50mm bolt or a 500g crow on a runway at up to around 1km distance; once found, both can be removed by a mobile airside safety crew.

COMPUTERISED EVENT RECORDS

Technological improvements to bird dispersal systems have now made these compatible with automatic data collection systems. We are now in a position to integrate existing safety systems with virtually automatic detection, triggering computers in Control Tower and "on-board" in airside Operations vehicles, giving the driver the precise location of birds and FOD on a runway to within a few metres. Their detection is recorded and the removal is logged automatically; when bird distress calls are broadcast these are also noted.
In actioning a due diligence, due care, airport safety management policy for birdstrike avoidance actions, it is now an expectation that these are automatically recorded by a Data Management System, perhaps also noting other 'good housekeeping' actions by the Safety Team to other potential airside hazards.
Data collection can be by vehicle installed computers, used in the day to day airport risk management process, and/or downloaded by email or Bluetooth processes to a central airport computer from which airside operational efficiency can be established, the effectiveness of the chosen policy confirmed and monitored.
Computer stored data can be used for efficiency monitoring and as real evidence at accident investigations, an improvement over the practice of hand written notes as these are not reliant on operator memory and cannot be 'adjusted' after accidents. Data can also be used for comparative cross reference at daily, weekly, monthly or yearly intervals and within Groups of airports.
However, new technology alone will not deal with these problems; trained staff working for an enlightened management will always be necessary to ensure the same technology is correctly implemented.
The potential exists for systems that are automatic or are totally computer controlled to actually increase imminent dangers, the reason why we promote dispersal systems where the facility for human control is incorporated.

REVIEW HUMAN ATTITUDE

As with all things new, ours and others' attitudes may have to be the first things to change! As an example, tried and we thought abandoned years ago, the idea of putting loudspeakers playing 'bird' and other noises down runways at fixed positions is being discussed again.
We cannot state that this principle is not at all effective but we can state that vehicle based mobile systems are in majority use with proven efficiency.

SYSTEM COST AND EFFICIENCY

Fixed systems are not regarded as an efficient, or indeed a safe, method by which to broadcast bird distress calls; by their very nature they are also expensive in hardware and installation.
Depending on the location of the "bird control point", it may not be possible for the Operator to identify the bird or indeed hear that the right bird distress call is actually being broadcast so questions must be raised:
"*If they cannot, how do they know the birds can hear it?*
"If the birds do not disperse in response to a fixed position broadcast, or non-broadcast, what does the Operator then do?
"Despatch a vehicle to do the job and if so, will aircraft be held while this is done?
"Is this more efficient than having the vehicle out on the airfield doing the job in the first place?
New generation Ground Radar systems will also identify the location of birds and other forms of FOD and prompt area attendance by the airside mobile Safety Team.
When the bird control Operator takes a mobile bio-acoustic bird dispersal system to the problem flock of birds, they are able to hear the broadcast clearly, set the sound level according to the task in hand and turn it off when they have completed the task of dispersal.

DISPERSAL EFFICIENCY EXPECTATIONS

In 2002 we carried out a survey of our product performance at 38 hub and regional civil airports together with some military ones in the UK.
Distress calls broadcast to birds through high quality equipment and operated by staff fully acquainted with the technique, achieved a good rate of dispersal using distress calls alone, as the following results show. In the sole case of SCARECROW products these calls are always played from a natural beginning and are shown to demonstrate a good rate of dispersal.

When used by trained full-time bird control personnel the following results were obtained:

Species or Group	Success Rate		
	Good	Moderate	Poor
All Gulls	86%		14%
All Corvids	75%		25%
Lapwing	67%		33%
Starling	75%		25%

Employed as part of a fully functional Integrated Bird Management System professional mobile bio-acoustic products can be seen to reduce the number of high risk species on airports and thus improve chances of Birdstrike Avoidance.
Combining the use of distress calls with other dispersal means can therefore be expected to produce near 100% dispersal.
Importantly, bird scaring cartridges whilst being a valuable 'last resort' dispersal method may now be politically or socially unacceptable, whereas the use of the real distress calls of birds is not only humane but fully acceptable to Security Forces and to those involved in the protection and conservation of birds and other wildlife.
Note that new EU Directives dictate that humane bird dispersal must be attempted before any shooting of birds takes place and these attempts have to be documented.

THOUGHTS OF DAYS GONE BY

The use of Birds of Prey, Falconry, or even dogs, may be environmentally praiseworthy attractions but for various operational and value reasons we do not consider them high on the list as part of this Centuries risk management, due care/due diligence responsibilities. For example, how do you data record their actions and monitor their functional efficiency with absolute certainty and in a way that demonstrates a recognition of an airport Operators legal responsibility?

THE SAFETY MANAGEMENT INITIATIVE

Four leading UK Companies, Clickairport, Scarecrow Bio-Acoustic Systems, N.H. Bird Management and QinetiQ are key players in the field of flight safety and are working as a Group to raise awareness of best practice bird and debris control processes offered by new and emerging technology.
Where is this leading? Not to commercial marketing of new equipment, if these are necessary and efficient they will eventually be adopted anyway. This is part of a scheme to increase the awareness of end users to what is currently available, to improve their choice and help airport operators to develop their safety management plans to encompass best practice using the latest technology.
The Group have worked closely together since 2003 to ensure that their products have high compatibility and interconnectivity and will promote their adoption within those organisations responsible for due diligence in improving and maintaining total flight safety.

SO, IN 2005 HOW FAR HAS THIS NEW TECHNOLOGY BEEN ADOPTED, OUR GROUP MISSION UNDERSTOOD AND ACCEPTED?

As far as our bio-acoustic technology is concerned the latest versions are functional at all UK Civil airports as well as in excess of 100 Civil and military ones around the world.

In the case of computer capture of data relating to bird control activities, this is functioning with BAA, Peel Airports, the Royal Air Force. Many other Authorities are evaluating the required ISIS software.

In addition, 26 military airfields in Italy have recently taken delivery of bio-acoustic systems ready for direct data capture links over the next few months. The Belgium Defence Ministry are in a similar state of preparedness at 7 airfields.

Qinetiq F.O.D detecting radar has been trialLed at Civil and military airports in the UK and Canada with planned roll-out in 2006.

Clickairport airside data capture systems are in use with, The Royal Air Force, The Royal Navy, British Airports Authorities, AENA, Spain, Ferrovial, British Aerospace, Wharton, DERA, St Athan.

Several low cost and holiday airlines have commissioned Reviews of airports outside the UK to establish how safe they are from a birdstrike avoidance point of view and to ensure that steps are taken to bring them to an acceptable Standard before use. These are a very good recognition of their responsibilities for passenger and general safety; after all, we are all in the business of Risk Management where a lack of awareness has been proven to lead to hazardous and even fatal circumstances.