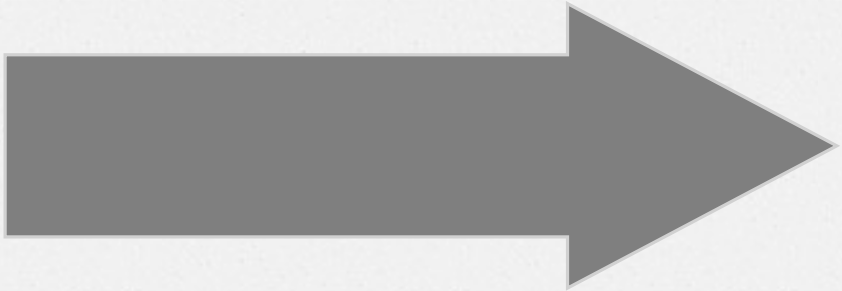
WILDLIFE WORKSHOP
KHARTOUM 10 – 12DEC 2018

Wildlife in the Aerodrome

Traffic Circuit

Common understanding:

- Wildlife traditionally refers to undomesticated animal species.
- But has come to include all plants, fungi, and other organisms that grow or live wild in an area without being introduced by human.



PLAN

- Common understanding
- Description
- Known Types of wild life that constitutes hazards to the navigation
- Typical scenarios
- Conclusion

- The potential of Wild life hazardous to the navigation of flights, starts from position (1) on the aerodrome traffic circuit and extends to the all phases of flight.

Description

- A bird strike is strictly defined as a collision between a bird and an aircraft which is in flight or on a take off or landing roll.
- The term is often expanded to cover other wildlife strikes - with bats or ground animals.

Known Types of wild life that constitutes hazards to the navigation :

- Bird Strike is common and can be a significant threat to aircraft safety.
- For smaller aircraft, significant damage may be caused to the aircraft structure and all aircraft, especially jet-engined ones, are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes.
- This has resulted in a number of fatal accidents.

- Bird strikes may occur during any phase of flight but are most likely during the take-off, initial climb, approach and landing phases, due to the greater numbers of birds usually fly at lower levels.
- Since most birds fly mainly during the day, most bird strikes occur in daylight hours as well.

Effects:

- The nature of aircraft damage from bird strikes, which is significant enough to create a high risk to continued safe flight, differs according to the size of aircraft.
- Small, propeller-driven aircraft are most likely to experience the hazardous effects of strikes as structural damage, such as the penetration of flight deck windscreens or damage to control surfaces or the empennage

- Larger jet-engined aircraft are most likely to experience the hazardous effects of strikes as the consequences of engine ingestion. Partial or complete Loss of control may be the secondary result of either small aircraft structural impact or large aircraft jet engine ingestion. Loss of flight instrument function can be caused by impact effects on the Pitot static system air intakes which can cause dependent instrument readings to become erroneous

- Complete Engine failure or serious power loss, even on only one engine, may be critical during the take-off phase for aircraft.
- Bird ingestion into one or more engines is infrequent but may result from the penetration of a large flock of medium sized birds or an encounter with a smaller number of very large ones.

- In some cases, especially with smaller fixed wing aircraft and helicopters, windscreen penetration may result in injury to pilots or other persons on board and has sometimes led to loss of control.

- Although relatively rare, a higher altitude bird strike to a pressurized aircraft can cause structural damage to the aircraft hull which, in turn, can lead to rapid depressurization.

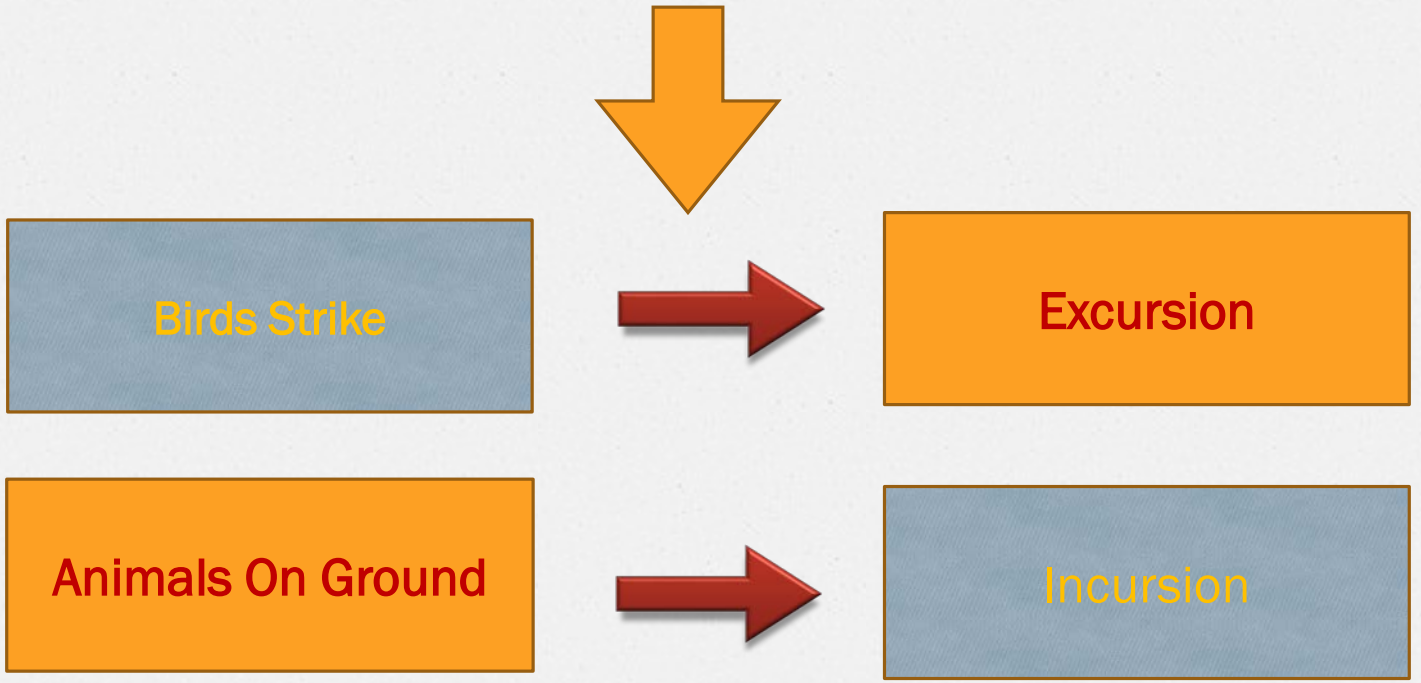
- A more likely cause of difficulty is impact damage to extended landing gear assemblies in flight, which can lead to sufficient malfunction of brakes or nose gear steering systems to cause directional control problems during a subsequent landing roll.
- A relatively common but avoidable significant consequence of a bird strike on the take off roll is a rejected take off decision which is either made after V1 or which is followed by a delayed or incomplete response, and which leads to a runway excursion off the end of the departure runway.

- Generally :
- Common Wild life with direct impact to the daily air navigation ops are :

  A- birds strike

  B- Animals on ground

Wild Life Impact On R/W OPS



Defenses

- The primary defense against hazardous bird strikes stems from the requirements for continued safe flight after strikes which are included in the general airworthiness requirements of the Aircraft Type and Aircraft Engine Type Certification processes.
- However, these requirements are not a complete protection and are also mainly focused on large fixed wing transport aircraft. The relevant design requirements for smaller fixed wing aircraft and helicopters are very limited.

- The opportunities to mitigate the risk of hazardous bird strikes in the first place are centered on airports, because this is where the greatest overall volume of conflict occurs, and because this is where management and control of the hazard is most easily achieved. However, there are two problems with this approach:

A. The airport-centered bird strike risk is rarely confined to the perimeter of any particular airport.
B. Many of the most hazardous strike encounters - those with large flocking birds - take place so far from the airport that the airport operating authority will often have little real influence over the circumstances.

C. Establishing and monitoring levels of bird activity is important and a critical part of this process is the recording of bird strikes at the local level. This then provides the opportunity to build up larger databases and to share the information.

D. Following that:-

E. Information to the ATC unit in the frequent basis, reduces the risk of birds strikes.

F. Direct radio communication with ground staff those responsible of guarding the airport fence is very essence and supportive to the ATC unit to assist pilots in early decision.

After all procedures and polices became in place, ATC unit is still responsible to comply to the context of Doc 4444:

7.5.2 Essential information on aerodrome condition – F- other temporary hazards , including parked aircraft and birds on the ground or in the air .

Objective of ATS

- 2.2 Objective of air traffic services

the objective of air traffic services shall be to : ..... etc

ATC action in case of aircraft bird strike:-

- Checklists
- A simple set of acronyms has been provided which may make it easier for controllers to remember the immediate actions, or sequence of actions, to be followed on initial notification in event of unusual/emergency situation.
- The use of abbreviations and acronyms in the checklists is common in the ATC world and it seems logical, therefore, to recommend a few relevant checklist possibilities:

- RISC
- Recognize that there is a problem
- Identify the relevant aircraft and arrange for special code Squawk
- Separate - Give the pilots airspace in which to operate and give them time
- Communicate with adjacent sectors/colleagues/supervisors as appropriate

- TAS
- Time - Give the pilot time to sort out the immediate problem on receipt of first notification that there is a difficulty
- Airspace - Give the pilot freedom of the adjacent airspace - get other aircraft out of the way, and off the frequency
- Silence - The controller should clear the frequency and not raise more questions than are necessary

- SSSS
- Squawk - Acknowledge the call; make sure the correct squawk is produced
- Silence - Keep the Radiotelephony (RTF) to as low a level as possible - where possible assign a single frequency to the incident
- Separate - Provide appropriate and adequate airspace for the pilot to execute any essential manoeuvres
- Shout - Ask for assistance from the ATC supervisor and/or colleagues

- QRST
- Quiet - Keep the frequency clear
- Recognize that there is a problem when the message is received
- Separate - Provide airspace
- Time - Give the pilot time to work on it

- ATIS
- Announcing and acknowledging the emergency or problem, getting the pilot to make the appropriate squawk
- Taq - Giving the pilot time, airspace and quiet
- Information exchange pilot/controller and controller/controller
- Solving the problem as a team controller/controller and controller/pilot

- ASSA
- Acknowledging the emergency or problem, getting the pilot to make the appropriate squawk
- Separate the traffic and support the pilot in so far as is possible
- Silence - Keep the RTF to a minimum; give the pilot time to think
- Advise supervisor and appropriate colleagues on other sectors

- ASSIST
- Acknowledge the call; get the squawk
- Separate the aircraft from other traffic. Give it room to manoeuvre
- Silence - on the frequency. Provide separate frequency where possible - this prevents unnecessary clutter for the pilots
- Inform those who need to know and those who can help; inform others as appropriate
- Support the pilots in any way possible - Start to think of alternative routings, etc.
- Time - Give the pilots time to collect their thoughts, don’t harass them for information. Time produces good decisions

- Typical Scenarios
- Bird ingestion to three out of four engines of a departing jet transport occurs at 200 feet AGL after take off has been made despite ATC advice of the presence of large birds and an offer to have them dispersed. As a result, one engine is disabled completely and two others are sufficiently damaged to the extent of only producing reduced thrust. An emergency return to land is made.

- A flock of medium-sized birds is struck by a jet transport just after V1 but before V_r with a rejected take off response despite take off performance being limiting due to aircraft weight. As a result, an overrun occurs with substantial aircraft damage.

Con..

- A twin-engined light aircraft flies into a single heron at 200 feet AGL after take off and it breaks through the windscreen and hits the pilot who temporarily loses control so that upon recovery, a forced landing ahead is the only option
- Wing root damage to a single-engined light aircraft caused by a vulture-strike during climb out causes structural damage to such an extent that control is lost and terrain impact results.

Conclusion