Expanding the Scope of Runway Safety: FOD and Bird Strikes

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To present a case to expand the definition of “Runway Safety” to include:

- Incursions
- Excursions
- Foreign Object Damage
- Wildlife (Bird) Strikes
FOD and Bird Strikes: In Numbers

- Industry Cost: $4 to $13 billion/yr
  Airline Industry 2011 Forecast Net Profit: $8.6 billion
- One Major US Carrier Direct Cost: $113 million/yr
- Bird Strike Costs for US Carriers: $600 million/yr
FOD and Bird Strikes: In Pictures

FOD: 25.07.00

Bird Strike: 22.09.95
Current Runway FOD Practices

ICAO

- Annex 14
  - Surface clear of any loose stones or other objects

- Part 8 and Part 9
  - Inspect regularly and at least every 6-hours and upon advice of pilots
Current Runway FOD Practices

Example:
- 3,000m x 60m runway
- Periodic visual inspections 4 times daily

= 10 to 15 minutes inspection time per day or 1% of Runway Operating Time

What business would accept only knowing the condition of its primary asset for 1% of its operating time?
Current Runway FOD Practices

Weaknesses of Periodic Visual Inspections:

- Frequency
- Timing
- Accuracy
Frequency and Timing

Aircraft Movements

00:01  30
05:15  189
10:05  356
16:03  275
20:50
23:59  56
Accuracy

- Human Factors
  - Limitations of human vision
    - visual acuity, contrast sensitivity
    - light, weather conditions

- 1,333 m²/sec
Runway FOD Facts

YVR’s Experience on Parallel Runways:

Periodic Visual Inspection: 3–5 pieces/mo

Automated Surveillance: 30–35 pieces/mo

Virtually all FOD will ‘disappear’ without human intervention given enough time.
Bird Strikes

- Success of pesticide bans and wildlife protection programs:
  - Population increases
  - Habitat changes – adjusting to urban environments

- Airports are commonly one of the last large open green spaces in their urban environment

- 1999–2008: 71 accidents
  - 6 led to fatalities
Bird Strikes

- 90% of strikes occur at or in the vicinity of aerodromes
- 50% of strikes occur below 100’
Bird Strike Hazard Practices

- ICAO
  - Part 3
  - Annex 14
    - Take action to decrease the potential hazard on or in the vicinity of an aerodrome

Airport Wildlife Management Programs
- Data Driven: Monitor, Report, Assess Risk
- Habitat Management
- Wildlife Control
A Way Forward

- Fill the Data Gap
  - Verify the true costs and sources of Foreign Object Damage
    - by Air Carrier, by Airport, by Region, Globally

- Increase Scope of Local Runway Safety Teams
    - Automated Runway FOD Detection, Avian Radar
A Way Forward

- Update guidance material and standards on Runway FOD and Wildlife Management

- Provide leadership, and the aviation perspective, on international co–operation and co–ordination for the management of migratory birds
Acknowledgements

- www.skybrary.aero

- *Runway Safety: FOD, Birds, and the Case for Automated Scanning*
  Iain McCreary, Insight SRI

- *Aerodrome Bird Hazard Prevention and Wildlife Management Handbook*
  Airports Council International

- Vancouver Airport Authority
Thank you

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