Introduction
Offshore Aviation in Brazil

Since 1980

Air passenger and cargo transport to offshore platforms began in the 1980s. The largest customer in Brazil is PETROBRAS, which ranked fifth in 2011 among the largest publicly traded oil companies in the world.

Air passenger and Cargo Transport

Medical Evacuation

Helicopter Maintenance

Helicopter Transport of External Cargo.
ANAC regulatory agency established to regulate and inspect civil aviation activities as well as aeronautical and airport infrastructure in Brazil.

The government agency works to ensure civil aviation safety and security and to improve the quality of services, fostering a competitive market.

CENIPA

Brazilian Aeronautical Accidents Investigation and Prevention Center (CENIPA) is the body of the Aeronautical Command responsible for the aeronautical accident investigation activities of civil aviation and the Brazilian Air Force.

The aircraft accident investigations are based on ICAO Annex 13.

CENIPA manages the Brazilian wildlife strike database.
Brazilian Legislation
Brazilian Legislation

- Resolution 4 from the National Council of Environment (CONAMA)
- Resolution 237 from the National Council of Environment (CONAMA)
- Normative Instruction IBAMA 72
- Basic Bird Strike Management Plan PCA 3-2.
- Complementary Law nº 140

Timeline:
- 1995
- 1997
- 2005
- 2011
- 2011
Brazilian Legislation

- Law Nº 12.725
- Brazilian Civil Aviation Agency Regulation Nº 164
- IS Nº164 -001 from Brazilian Civil Aviation Agency
- Resolution 466 from the National Council of Environment (CONAMA)
- CENIPA 111/DOP- AGRF/2017 – MCA 3–8

Timeline:
- 2012
- 2014
- 2015
- 2015
- 2017
Brazilian Legislation

- Ordinance 692/GC3/2017
- Ordinance 741/GC3/2018

IMPORTANT

- 1 legislation on 2005
- 9 legislations from 2011 and 2018 (75% during the last 8 years)
Brazilian Statistics
Brazilian Statistics
Reported Strikes versus Brazilian aircrafts registered fleet from 2008 to 2015

Source: CENIPA, 2016
### Brazilian Statistics

Reported Strikes per Phase of Flight in 2015

<table>
<thead>
<tr>
<th>Phase of Flight</th>
<th>Reported Strikes</th>
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</thead>
<tbody>
<tr>
<td>Departure Phase</td>
<td>515 (30.0%)</td>
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<tr>
<td>Arrival Phase</td>
<td>666 (36.5%)</td>
</tr>
<tr>
<td>Total</td>
<td>64.7%</td>
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</tbody>
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Source: CENIPA, 2016
Brazilian Statistics
Reported Events by Local Time in 2015

Strikes
Near misses
Sightings

Source: CENIPA, 2016
Brazilian Statistics

Reported Sighthings per Month from 2011 to 2015

Source: CENIPA, 2016
Brazilian Statistics

Reported Near-misses per Month from 2011 to 2015

Source: CENIPA, 2016
Brazilian Statistics
Reported Strikes per Month from 2011 to 2015

Source: CENIPA, 2016
Considerations

**Regulation update**
Providing guidance to major aviation stakeholders in order to prevent accident due to wildlife strikes.

**Online report**
The introduction of “on line reporting system” (SIGRA - CENIPA 15 form) facilitate the reporting of wildlife strikes events by aviation stakeholders.

**Brazilian fleet**
The amount of reported strikes has continously increased since 2008 due to the Brazilian fleet and aircraft movements growth.

**Communication**
Safety campaigns have improved pilots’ situational awareness regarding wildlife hazards. For example the number of CENIPA 15 form increased since 2008.

**Risk management**
A more robust data base has supported the risk management efforts by aviation stakeholders, specially airport operators.
Case Study
During initial climb out the crew members saw a flock of birds, they tried to avoid a strike by manoeuvring the helicopter to the left (before reaching 500 feet AGL). Pilots then saw another flock of birds, tried again another evasive manoeuvre to avoid the strike. However a black vulture hit the aircraft nose at approximately 700 feet AGL and 90 kt. After the impact the flight crew returned and safely landed at the same aerodrome.
**Bird Strike Costs**

**Direct Costs**
- Nose Radome: US$ 18,057.53
- Tax: US$ 120.00
- Shipment: US$ 1,449.24
- Maintenance (labor cost): US$ 1,500.00

Total direct cost: US$ 21,126.77

**Indirect Costs**
- Helicopter fixed cost per day (average): US$ 10,000.00
- Helicopter Offshore loss of revenue per hour (average): US$ 2,000.00
  
Fixed: US$ 10,000.00 X 2 days = US$ 20,000.00

Total loss of revenue: US$ 2,000.00 x 12 hours = US$ 24,000.00

Total indirect cost: US$ 44,000.00

**Helicopter not airworthy for 2 days**

Schedule 3 flights per day > Total 6 hours per day

- Basic helicopter (R 44) U$ 180.00
- Sightseeing Flight (AS 350) U$ 2,000.00
- Transport Flight (AS 350) U$ 1,800.00
Bird Strike Costs

DIRECT COSTS: US$ 21,126.77

INDIRECT COSTS: US$ 44,000.00

Total: US$ 65,126.77
Communication process
Communication Process – Bird Strike

Pilot
Report to CENIPA using the CENIPA 15 form.

Pilot
Report by e-mail to safety and operations managers

Pilot
Pilots Report on flight and maintenance logbook

Safety Department
Customer informed by email

Maintenance Department
ANAC is informed through Service Difficulty Report
Communication Process and Actions - After Bird Strike

**Safety Department**
Completes customer investigation form to provide bird strike details.

**Safety Department**
Sends formal letter to the airport administration.

**Safety Department**
If this event was classified as an aircraft accident or incident, the Aeronautical Accidents Investigation and Prevention Regional Office should be notified.

**Safety Department**
Promotes flight safety.

**Safety Department**
Provides pilots feedback about all the activities developed to mitigate bird strike.
Flight Safety promotion

01 Safety Alert

02 Biweekly pilots’ meeting

03 Safety Week

04 Safety Seminar
Final thoughts
Bird Strike Prevention on Offshore Operation

Information
- Use Automatic Terminal Information Service (ATIS) and Notices to Airmen (NOTAM) to enhance aviation safety.

In-flight procedure
- Use the helicopter landing lights during departure and arrival phases of flight.

In-flight procedure
- Reduce airspeed to 100 kt while entering the onshore line.

Pilot Training
- Use the helicopter controls to pull up and turn to avoid bird strike.

Pilot Training
- The correct use of CENIPA 15 form. It is important to wildlife strike management because information is paramount for safety efforts and programs developed by aviation stakeholders.
Database is Essential for Wildlife Strike Mitigation Efforts

A POOR SAFETY culture is the main obstacle for wildlife strike reporting by crews and airport stakeholders.

Why does it happen?

Low situational awareness of the relationship between reporting and wildlife strike management.

Low rate of aircraft accidents due to wildlife strikes

What should we do to improve our database?

Enhance crew training (initial and refreshing) and airport stakeholders instructions to improve the quality of strike reports.

Improve integration and the communication process among aviation stakeholders.
Thank you!

Carlos Schönhardt, MSc
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References


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