

COMANDO DA AERONÁUTICA
CENTRO DE INVESTIGAÇÃO E PREVENÇÃO DE
ACIDENTES AERONÁUTICOS



FINAL REPORT
IG - 072/CENIPA/2017

OCCURRENCE:	SERIOUS INCIDENT
AIRCRAFT:	PT-YSW
MODEL:	AS 350 BA
DATE:	05MAY2017



NOTICE

According to the Law n° 7565, dated 19 December 1986, the Aeronautical Accident Investigation and Prevention System – SIPAER – is responsible for the planning, guidance, coordination and execution of the activities of investigation and prevention of aeronautical accidents.

The elaboration of this Final Report was conducted taking into account the contributing factors and hypotheses raised. The report is, therefore, a technical document which reflects the result obtained by SIPAER regarding the circumstances that contributed or may have contributed to triggering this occurrence.

The document does not focus on quantifying the degree of contribution of the different factors, including the individual, psychosocial or organizational variables that conditioned the human performance and interacted to create a scenario favorable to the accident.

The exclusive objective of this work is to recommend the study and the adoption of provisions of preventative nature, and the decision as to whether they should be applied belongs to the President, Director, Chief or the one corresponding to the highest level in the hierarchy of the organization to which they are being forwarded.

This Report does not resort to any proof production procedure for the determination of civil or criminal liability, and is in accordance with Appendix 2, Annex 13 to the 1944 Chicago Convention, which was incorporated in the Brazilian legal system by virtue of the Decree n° 21713, dated 27 August 1946.

Thus, it is worth highlighting the importance of protecting the persons who provide information regarding an aeronautical accident. The utilization of this report for punitive purposes maculates the principle of “non-self-incrimination” derived from the “right to remain silent” sheltered by the Federal Constitution.

Consequently, the use of this report for any purpose other than that of preventing future accidents, may induce to erroneous interpretations and conclusions.

N.B.: This English version of the report has been written and published by the CENIPA with the intention of making it easier to be read by English speaking people. Taking into account the nuances of a foreign language, no matter how accurate this translation may be, readers are advised that the original Portuguese version is the work of reference.

SYNOPSIS

This is the Final Report of the 05MAY2017 serious incident with the AS 350 BA aircraft model, registration PT-YSW. The serious incident was classified as “[BIRD] Bird Strike”.

On the final approach, approximately three miles from the runway, the aircraft crashed into a bird, breaking the windshield.

The pilot made a precautionary landing on an open field and, after evaluating the aircraft's conditions, he proceeded to the National Aviation Aerodrome (SWNV), Goiânia - GO.

The aircraft had minor damage.

The pilot suffered minor injuries and the passengers left unharmed.

An Accredited Representative of the *Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile* (BEA) - France (State where the aircraft was designed) was designated for participation in the investigation.



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GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

AD	Aerodrome
AGRA	Bird Hazard Management Area
ANAC	Brazil's National Civil Aviation Agency
ASA	Airport Security Area
BEA	<i>Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile</i>
CA	Airworthiness Certificate
CENIPA	Aeronautical Accident Investigation and Prevention Center
CG	Center of Gravity
CMA	Aeronautical Medical Certificate
HMNT	Single Turbo Helicopter Rating
IPF	Wildlife Hazard Identification
MCA	Aeronautics Command Manual
PCA	Aeronautics Command Plan
PCH	Commercial Pilot – Helicopter category
PGRF	Wildlife Hazard Management Plan
PPH	Private Pilot – Helicopter category
RBAC	Brazilian Civil Aviation Regulation
ROTAER	Auxiliary Air Route Manual
RWY	Runway
SIPAER	Aeronautical Accident Investigation and Prevention System
SWNV	ICAO Location Designator - National Aviation Aerodrome, Goiânia - GO.
S/N	Serial Number
TPP	Registration Category of Private Service - aircraft
UTC	Universal Time Coordinated
VFR	Visual Flight Rules

1. FACTUAL INFORMATION.

Aircraft	Model: AS 350 BA	Operator: Private
	Registration: PT-YSW	
	Manufacturer: Eurocopter France	
Occurrence	Date/time: 05MAY2017-1720 (UTC)	Type(s): [BIRD] Bird Strike
	Location: Outside the Aerodrome	
	Lat. 16°36'56"S Long. 049°22'20"W	Subtype(s): NIL
	Municipality – State: Goiânia – GO	

1.1 History of the flight.

The aircraft took off from an unregistered location in the municipality of Porteirão - GO, to the National Aviation Aerodrome (SWNV), Goiânia - GO, in order to carry out a passenger transport flight, with a pilot and four passengers on board.

During the final approach for landing on SWNV, approximately three miles from the runway, the aircraft collided with a black-headed vulture (*Coragyps atratus*).

The pilot made a precautionary landing to check the condition of the aircraft and, after evaluating the conditions, proceeded to the destination.

The aircraft had minor damage.



Figure 1 - Internal view of the right windshield damaged by the impact against the vulture.

The pilot suffered minor injuries and the passengers left unharmed.

1.2 Injuries to persons.

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Serious	-	-	-
Minor	1	-	-
None	-	4	-

1.3 Damage to the aircraft.

The damage was restricted to the aircraft's windshield.

1.4 Other damage.

None.

1.5 Personnel information.**1.5.1 Crew's flight experience.**

Flight Hours	Pilot
Total	3.000:00
Total in the last 30 days	40:00
Total in the last 24 hours	01:55
In this type of aircraft	2.000:00
In this type in the last 30 days	40:00
In this type in the last 24 hours	01:55

N.B.: The data related to the flown hours were informed by the pilot.

1.5.2 Personnel training.

The pilot took the PPH License in 2005.

1.5.3 Category of licenses and validity of certificates.

The pilot had the PCH License and, his HMNT Rating was overdue since April 2017.

Section 61.33 - Term and tolerance for revalidation of Rating, of the RBAC n° 61 - Licenses, Ratings and Certificates for Pilots established that:

- (a) Provided that the requirements applicable to the revalidation of a Rating are fulfilled, the proficiency exam pertinent to this revalidation can be carried out in the period between 30 (thirty) days before the beginning of the expiration month and up to 30 (thirty) days after the end of the expiration month, maintaining the base expiration month for the new validity, after the revalidation is completed.
- (b) The normal operation related to a Rating overdue for less than 30 (thirty) days is allowed.
- (c) Normal operations relating to a Rating overdue for more than 30 (thirty) days, in any situation, are prohibited.
- (d) Ratings revalidated outside the period provided for in paragraph (a) of this section will have their validity periods counted from the month of the pilot's approval in the proficiency exam, as provided in letter (a) of section 61.19.

1.5.4 Qualification and flight experience.

The pilot was qualified and had experience in the kind of flight.

1.5.5 Validity of medical certificate.

The pilot had valid CMA.

1.6 Aircraft information.

The aircraft, serial number 2795, was manufactured by Eurocopter France, in 1994 and it was registered in the TPP category.

The aircraft had valid Airworthiness Certificate (CA).

The airframe and engine logbooks records were updated.

The last inspection of the aircraft, the "600 hours/24 months" type, was carried out, on 27MAR2017, by the maintenance organization *Fenix Manutenção e Recuperação de Aeronaves* Ltd., in Goiânia - GO, with the aircraft having flown 25 hours after the inspection.

1.7 Meteorological information.

The weather conditions were favorable for the flight.

1.8 Aids to navigation.

Nil.

1.9 Communications.

Nil.

1.10 Aerodrome information.

The National Aviation Aerodrome (SWNV) was public, managed by the Goiás State Government and operated under Visual Flight Rules (VFR), during the day.

The runway was made of asphalt, thresholds 13/31, with dimensions of 1,100m x 20m and elevation of 2,707ft.

In 2018, the Aerodrome location designator was changed to SBNV.

1.11 Flight recorders.

Neither required nor installed.

1.12 Wreckage and impact information.

Nil.

1.13 Medical and pathological information.**1.13.1 Medical aspects.**

Not investigated.

1.13.2 Ergonomic information.

Nil.

1.13.3 Psychological aspects.

Not investigated.

1.14 Fire.

There was no fire.

1.15 Survival aspects.

Nil.

1.16 Tests and research.

Nil.

1.17 Organizational and management information.

Nil.

1.18 Operational information.

The aircraft was within the weight and balance limits specified by the manufacturer.

1.19 Additional information.

ASA means the circular area of the territory of one or more municipalities, defined from the geometric center of the largest aerodrome runway, with a 20 km radius, whose use and occupation are subject to special restrictions, due to the attractive nature of wildlife.

Federal Law n° 12.725, from 16OCT2012, which dealt with the control of wildlife in the vicinity of aerodromes and established rules aimed at reducing the risk of accidents and

aeronautical incidents resulting from the collision of aircraft with wildlife specimens in the vicinity of aerodromes considered that:

VII - activity with potential wildlife attraction: sanitary landfills and any other activities that, using the appropriate operating and handling techniques, do not constitute an attractive focus for wildlife within the ASA, nor compromise the operational safety of aviation;

In the city of Goiânia - GO, there were activities with potential wildlife attraction among them the Goiânia Sanitary Landfill stood out, located at 16°38'44"S / 049°21'55"W, at about 3km away from SWNV (Figure 2).



Figure 2 - Distance from the sanitary landfill to SWNV.
(Source: Google Maps)

At the time of the incident, the PCA 3-2 “Bird Hazard Management Basic Plan”, dated 06MAY2011, was in force.

According to item 4.6 of the PCA 3-2, airport administrations were responsible for:

- 4.6.1. Fill out and send to the CENIPA, Form 15 (Annex A), for reporting collisions, near collisions and animal sightings, as well as the CENIPA’s Form 15A (Annex B), for reporting outbreaks of bird attraction outside the airport site...
- 4.6.2. Share with the SERIPA from the respective area the information related to attractive bird spots, located inside and outside the airport site.
- 4.6.3. Perform, within the possibilities, the initial survey of the attractive bird spots existing in the Bird Hazard Management Area (AGRA) of the Aerodrome under its responsibility.

The CENIPA’s Form 15 was available at its website.

The RBAC n° 164, from 30MAY2014, which dealt with Wildlife Hazard Management at Public Aerodromes, established rules for the management of wildlife hazard and applied to public aerodrome operators that fit the established criteria.

According to the RBAC, these aerodromes should ensure that a Wildlife Hazard Identification (IPF) and a Wildlife Hazard Management Plan (PGRF) are carried out.

The National Aviation Aerodrome (SWNV) was not on the list of aerodromes required to promote an IPF and prepare the PGRF.

The regulation also stipulated that no public aerodrome operator should dispense with basic operating procedures aimed at mitigating the wildlife hazard.

In this sense, the RBAC 164 established that:

164.53 Final provisions (...)

(g) The aerodrome operator must establish a routine of procedures to complete and forward to the CENIPA (or the agency that will succeed it in the registration and publication of operational safety events involving wildlife), reports of operational safety events involving wildlife and aircraft, for observing the agglomeration of birds in the vicinity of the aerodrome that have caused or may cause an impact on air operations, in addition to animal carcasses located in the operational area whose death resulted from an aircraft collision.

(1) In cases where the presence of animals is constant at the aerodrome and in its surroundings, to the point of causing frequent risk to air operations, the aerodrome operator must take steps to include and convey information in relevant aeronautical publications, with information, if possible, of the species (s) present, the location of the animals in relation to the runway system and the time (s) at which they are most present.

On 04DEC2017, the MCA 3-8 – Wildlife Hazard Management Manual was published. The document defined methodologies and mitigation procedures, integrated to the organizations operating at the aerodrome, mostly within the scope of a PGRF.

However, considering the receptivity of collisions with wildlife, the MCA recommended its application for all members of the air sector, including operators and aerodromes not included in the PGRF list.

Also according to the Manual, on average, only 1% to 2% of the ASA was in the aerodrome heritage area, effectively, under the responsibility of some component of the air sector. Thus, two distinct environments for the management of wildlife hazard were characterized, inside and outside aerodromes. The first, attributed by the municipal public authority, referring to the sanitary landfill located within the ASA, and the second, which is the responsibility of the aerodrome operator.

According to the manual, sanitary landfills were the most significant type of attractive focus for attracting problem species at the national level, and should be beyond 10 km away from aerodromes.

According to the SIPAER Panel, between 2010 and 2017 there were eight occurrences related to the collision with birds in Goiânia (Figure 3).

Painel SIPAER Lista de Ocorrências

Ano: 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 Trimestre: 1T 2T 3T 4T Mês: jan fev

LIMPAR PRINCIPAL PANORAMA SEGMENTOS

Filtros selecionados:

Campos: oc uf oc_ano oc_tipo

Valores Selecionados: GO NOT 2018, 2019, 2020 COLISÃO COM AVE

Filtros de Ocorrência

Classificação:
 Tipo de ocorrência: COLISÃO COM AVE
 UF: GO
 Localidade: GOIÂNIA
 Aeródromo:
 Fator Contribuinte:
 Taxonomia ICAO: BIRD

Filtros de Aeronave

Tipo da Aeronave:
 Fabricante:
 Modelo:
 Nº Motores:
 Tipo de Motor:
 Peso da Aeronave:
 Saída de Pista: NÃO

Data da Ocorrência: Digite a Data dd/mm/aaaa
 Aeronave: Digite a Matrícula
 GLOSSÁRIO TAXONOMIA ICAO

Nº ocorrência	Data	Aeronave	Classificação	Tipo	Taxonomia ICAO	Localidade
67158	17/08/2017	PRAXA	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA
66731	05/05/2017	PTYSW	INCIDENTE GRAVE	COLISÃO COM AVE	BIRD	GOIÂNIA
51083	12/04/2014	PRMHA	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA
50563	06/12/2013	PPEJG	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA
46707	02/12/2012	PRAXG	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA
45609	13/03/2012	PPPJN	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA
44052	19/01/2011	PRAYK	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA
39365	12/02/2010	PRMAA	INCIDENTE	COLISÃO COM AVE	BIRD	GOIÂNIA

Figure 3 – Occurrences of Bird Strike in Goiânia.
(Source: SIPAER Panel)

On the CENIPA's website, there was an area for filling out the Report on Events of Interest with Wildlife - (CENIPA's Form 15).

Sistema de Gerenciamento de Risco Aviário - Sigrá
 REPORTE DE EVENTOS DE INTERESSE COM FAUNA - (Ficha CENIPA 15)

Tipo de Evento -> Colisão Quase colisão Avistamento

Campos em Vermelho são Obrigatórios

Aviso!

O uso inapropriado do sistema e de seus dados deve ser evitado, pois a informação coletada é a base do Sistema de Gerenciamento de Segurança Operacional e o seu mal uso prejudica a remessa de informações pelo setor aeronáutico. Os dados registrados podem ser utilizados por operadores de aeródromos na orientação de seus Programas de Gerenciamento de Risco de Fauna e na obtenção de autorização ambiental para manejo de fauna. O resumo anual de dados é remetido à Organização de Aviação Civil Internacional para compor o banco de dados mundial sobre o risco de fauna na aviação, suportando o desenvolvimento de estratégias de mitigação desse conflito homem-fauna.

Matrícula ANV: AERONAVE Data: 00/00/0000

AERONAVE

Operador: -- Escolha uma opção --
 Fabricante: -- Escolha uma opção --
 Modelo: -- Escolha uma opção --

TIPO DE AVIAÇÃO -- Escolha uma opção --

MOTOR (somente se houve colisão no motor):
 Fabricante: -- Escolha uma opção --
 Modelo: -- Escolha uma opção --

PERÍODO DO DIA

EFEITO NO VOO

Nenhum Não reportado
 Decolagem abortada Pouso de precaução
 Desestabilização na aproximação Corte / apagamento de motor
 Outros

CONDIÇÕES DO CÉU -- Escolha uma opção --

Precipitação: -- Escolha uma opção --

ESPÉCIME(S) DE FAUNA ENVOLVIDA(S) Adicionar outra Espécie

Nome popular ou científico: 0 Não identificada

Amostra(s) coletada(s) pr DNA Amostra(s) enviada(s) pr DNA
 Fotografada(s) Foto(s) enviada(s) pr identificar espécie

Avistada(s) Atingida Tamanho Estimado: Médio (251 a 750g)

Figure 4 – CENIPA's Form 15, available on the CENIPA website.

There were no records of filling in the CENIPA's Form 15 for collision, near collision or sighting of birds between the years 2010 and 2017, in the city of Goiânia - GO.

1.20 Useful or effective investigation techniques.

Nil.

2. ANALYSIS.

It was a passenger transport flight with a pilot and four passengers on board.

During the final approach to landing on SWNV, approximately 3nm away, the aircraft collided with a black-headed vulture (Figure 5).



(Figure 5) - Black-headed vulture.

The pilot made a precautionary landing to check the condition of the aircraft and, after evaluating the conditions, proceeded to the destination, without major complications.

The Federal Law n° 12.725, which provided for wildlife control in the vicinity of aerodromes, considered that the Sanitary Landfill was an activity with attractive wildlife potential that, when operated outside the standards, without using the proper techniques of operation and management, could contribute to the relevant attraction of wildlife.

In this sense, the possibility was raised that the Goiânia Sanitary Landfill, at about 3km away from SWNV, was configured as a possible attractive wildlife activity and represented a potential risk for air traffic at the National Aviation Aerodrome, since the sanitary landfill was within the ASA.

The ASA, whose use and occupation were subject to special restrictions, due to the attractive nature of wildlife, constituted in a circular area of one or more municipalities territory, defined from the geometric center of the largest airfield runway, with a 20km radius, in which use and occupation were subject to special restrictions, due to the attractive nature of wildlife.

In this sense, both the municipal government, with an area within the ASA, and the Aerodrome operator had responsibilities in mitigating the wildlife hazard.

Therefore, the Bird Hazard Management Basic Plan, from 06MAY2011, in force at the time of the occurrence, established that airport administrations should fill out and send

CENIPA's Form 15, for reporting collisions, near collisions and animal sightings, as well as the CENIPA's Form 15A, for reporting outbreaks of bird attractions outside the airport site.

However, in spite of the eight events related to the bird strike that occurred in the city of Goiânia, between the years 2010 and 2017, there was no filling in of the Report on Events of Interest with Wildlife - (CENIPA's Form 15).

In this sense, the sharing of information related to the attractive bird spots, located inside and outside the airport site, the wildlife monitoring at the airport site and in its ASA and the appropriate filling in of the CENIPA's 15 and 15A Forms could assist in the development of a reliable database in the elaboration of the respective mitigation strategies and would contribute to the adoption of appropriate measures, with the objective of eliminating the possible attractive effect of wildlife existing in the ASA or in the vicinity of the aerodrome.

It is important to highlight that the information from the crash reports is one of the pillars for managing the wildlife hazard. The data set from the reports provides information, such as: the species involved in the collisions, the time of the year and the time of day with the highest occurrence of collisions, the place where the event took place (inside or outside the aerodrome), costs and time of aircraft unavailability caused by wildlife collisions, among other aspects.

After this occurrence, on 04DEC2017, considering the number of collisions occurred in up to 20km of the Brazilian Aerodromes, inside the ASA and, notably, inside aerodromes, the MCA 3-8 was published.

The manual defined methodologies and mitigation procedures integrated with the organizations operating at the aerodrome and recommended that all members of the air sector performed the basic operational procedures to avoid collisions with wildlife in the operation of aircraft in the area under their responsibility, since most of the wildlife strikes occurred at ASA.

In this sense, the MCA recommended integrated hazard management mitigation actions be carried out, according to the organizational reality and the best cost-benefit ratio.

Considering that only 1% to 2% of the ASA was in the aerodrome heritage area, effectively, under the responsibility of some component of the air sector, the manual characterized two distinct environments for wildlife hazard management, inside and outside aerodromes. The first, attributed by the municipal public authority, referring to the sanitary landfill located within the ASA, and the second, which is the responsibility of the aerodrome operator.

Thus, it is of fundamental importance that sanitary landfills act to reduce their attractive potential, as a way to prevent wildlife collision within an ASA.

3. CONCLUSIONS.

3.1 Facts.

- a) the pilot had valid CMA;
- b) the pilot's HMNT Rating was overdue since April 2017;
- c) normal operation related to a Rating overdue for less than 30 (thirty) days is allowed;
- d) the pilot was qualified and had experience in the kind of flight;
- e) the aircraft had valid CA;
- f) the aircraft was within the weight and balance limits;
- g) the airframe and engine logbooks records were updated;

- h) the weather conditions were favorable for the flight;
- i) at three miles from SWNV, the aircraft collided with a black-headed vulture;
- j) the pilot made a precautionary landing to check the conditions of the aircraft;
- k) the Goiânia Sanitary Landfill was located within the ASA;
- l) the SIPAER Panel indicated eight occurrences related to bird strike in Goiânia, between the years 2010 and 2017;
- m) in the field destined to fill in the Report on Events of Interest with Wildlife, there were no records of collision, near collision or sighting of birds between the years 2010 and 2017, in Goiânia - GO;
- n) the aircraft had minor damage; and
- o) the pilot suffered minor injuries and the passengers left unharmed.

3.2 Contributing factors.

- **Bird – a contributor.**

The aircraft collided with a black-headed vulture (*Coragyps atratus*) on the final approach for landing on SWNV.

- **Other – undetermined.**

Influence of the environment: the existence of a sanitary landfill, at about 3km away from the SWNM runway, constituted an activity with attractive wildlife potential, which may have contributed to the presence of the vulture near the Aerodrome.

4. SAFETY RECOMMENDATION.

A proposal of an accident investigation authority based on information derived from an investigation, made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or incident. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies.

In consonance with the Law n°7565/1986, recommendations are made solely for the benefit of the air activity operational safety, and shall be treated as established in the NSCA 3-13 “Protocols for the Investigation of Civil Aviation Aeronautical Occurrences conducted by the Brazilian State”.

Recommendations issued at the publication of this report:

To the Brazil’s National Civil Aviation Agency (ANAC):

IG-072/CENIPA/2017 - 01

Issued on 10/02/2020

Work with the Goiás State Government, in order to verify if the referred Goiânia Sanitary Landfill fulfills the requirements stipulated by Law 12.725, of 16OCT2012, referring to the ASA of the National Aviation Aerodrome (SBNV).

IG-072/CENIPA/2017 - 02

Issued on 10/02/2020

Work with the operator of the National Aviation Aerodrome (Goiás State Government), in order to verify if it performs the basic operational procedures to avoid wildlife collisions in the aircraft operation in the area under its responsibility.

IG-072/CENIPA/2017 - 03**Issued on 10/02/2020**

Work with the operator of the National Aviation Aerodrome (Goiás State Government), in order to verify, monitor and notify the attractive wildlife spots, in order to allow the identification of problem species, in order to mitigate the wildlife hazards in SBNV.

5. CORRECTIVE OR PREVENTATIVE ACTION ALREADY TAKEN.

In the local ROTAER, there was the following additional information:

"a. NOTE THE PRESENCE OF BIRDS (VULTURES) IN THE "SW" SECTOR OF THE AD, DUE TO THE EXISTENCE OF A SANITARY LANDFILL IN THE VICINITIES OF THE RWY 14/32 TRAFFIC CIRCUIT."

On October 2nd, 2020.

