

ACCIDENT RYANAIR AT CIAMPINO - COMMENTS ON THE FINAL REPORT

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Acronyms used

- AdR: Aeroporti di Roma spa
- AIP: Aeronautical Information Publication
- ANSV: Italian Agency for Flight Safety
- ATC: Air Traffic Control
- ATIS: Automatic Terminal Information Service
- BSCI: Bird Strike Committee Italy
- CDN: Navigation Code
- CTA: Air Traffic Controller
- EASA: European Aviation Safety Agency
- ENAC: Italian Civil Aviation Authority
- ENAV: Air Traffic Service Provider
- FAA: Federal Aviation Administration
- ICAO: International Civil Aviation Organization
- NOTAM: Notice to Airmen
- SAR: Search and Rescue
- TWR: Control Tower
- VVF: Firefighting service
- WBA: World Birdstrike Association

Foreword

The National Agency for Flight Safety (ANSV), the Italian entity in charge to carry out independent investigations on aviation accidents and serious incidents, has recently released the final report on the accident that occurred on 10.11.2008 at Rome Ciampino airport to the Ryanair Boeing 737 EI-DYG.

Please refer to that paper for the accident dynamics and the factual evidences; here, as usual, observations, comments and suggestions will be proposed in order to explore sectors not covered in the report but probably important for prevention purposes.

In other words, we will focus on what there is NOT in the report, and we believe should instead be there. In line with the method established by the ICAO Annex 13 and by the ANSV itself, the sole objective will be providing a contribution to the prevention of future accidents and incidents.

Investigations on bird strikes in Italy

This is the second time that ANSV has been involved in dealing with an event due to this cause. The first regarded a dual ingestion that occurred in Rome Fiumicino on 7.7.2007 to a Delta Boeing 767. In that occurrence, there were neither victims nor injuries but only damage to the engines and a high risk of a catastrophic event. There were victims though on 1.6.2003 in Milan Linate following an accident that occurred when a small business aircraft crashed after an engine failure caused by the ingestion of pigeons.

We are still awaiting a report on that incident and the related recommendations, which constitute the proactive part and the "lesson to learn" so that similar events will not be repeated.

The EI-DYG investigation, however, ended ten years after the event, when some entities had already independently corrected and improved their operating procedures and when, given the time gone by, the recommendations released by the ANSV look like more the conclusion of a paperwork still open than an exercise of real prevention.

Ciampino: roles and competences in 2008

Rome Ciampino was a military airport open to civil air traffic.

The Italian Air Force (AMI) was one of the two airport authorities, while the other was ENAC.

AMI and ENAC had different competences and responsibilities on different parts of the airfield, on the apron and on the equipment (the airport is the base for the 31st Wing and other services, e.g. Search and Rescue - SAR-). Most of the equipment, infrastructures and services had been delivered to ENAC, or directly built by themselves, following an agreement between civil and military administrations, according to the Law 242 of 1980.

ENAC is the National Authority for Civil Aviation. Its tasks and responsibilities are established by law and include in brief technical regulation, certification and control over all Italian civil aviation. The Authority had central and peripheral articulations called Airport Directorates that had more or less the same tasks on a local basis. The Airport Director could issue regulatory orders within the limits of his jurisdiction. Prevention of bird strikes was traditionally one of the points regulated by these orders.

Aeroporti di Roma spa (AdR) is the airport operator that in general provides the airport services. Its activity was regulated by a "contract of program" signed with ENAC.

AdR as operator, and Ciampino as airport infrastructure, were certified by ENAC according to the national legislation and ICAO.

Air traffic services (ATS), which include the Approach (APP) and Tower (TWR) services, were under the responsibility of the AMI.

For the sake of completeness, at the time of publication of the EI-DYG final report five ANSV investigators out of seven are AMI officers, the Chief of Defence Staff, an AMI General, is in the College of the Agency since 2017 and the ANSV General Manager is a Brigadier General (of the reserve) from AMI too.

Causes of the accident

The ANSV identifies the causes of the accident as follows:

"Unexpected loss of both engines thrust as a consequence of a massive bird strike during the go around manoeuvre".

The report mentions the following contributory factors:

"Inadequate effectiveness of bird control and dispersal measures put in place by the airport operator at the time of the accident".

Other contributing factors were identified in the decision to perform a go-around when the aircraft was at 7 seconds from the touchdown, which in turn was influenced by the lack of instruction to flight crew for such cases and by insufficient specific training.

Missing recommendations

While these last contributory factors have been thoroughly analysed and produced appropriate recommendations (to FAA and EASA), not a single word has been dedicated to the first of them, i.e. the insufficiency of airport prevention measures against bird strikes. The report mentions that the airport operator after the accident autonomously adopted more effective measures than those previously in force. However, since the investigations are aimed at prevention, and furthermore directed to the entire global aeronautical community, an invitation to the Authority in order to increase the vigilance on the state of prevention in all airports would have been useful.

Even if ENAC is to be acknowledged of having made significant progress in the production of regulations, technical indications and guidelines, the progressive reduction of personnel in the airport directorates, consequent to a changed policy, left some areas, previously overseen by a group of inspectors, almost uncovered. In fact, ENAC has gradually transformed itself into a certification body, with the majority of its functions centralized at the head office. Furthermore, very often the airport operator appoints the task of bird control to external companies.

Thus, the supervisory action is in fact carried out remotely and/or during inspections. Also at a central level the resources made available for this specific sector are scarce, so that the latest report by ENAC/BSCI on wildlife strikes in Italy (year 2017) has been released with a considerable delay only in March 2019. ENAC does not have its own in-house ornithologist and opted for an external consultant, with all the administrative problems that his/her status causes. The recommendation should therefore focus on **increasing the number of staff in the technical-administrative area in charge of this aspect and on the resources allocated to it.**

Increasing the vigilance on airport operators could also avoid unpleasant and banal falls of attention such as the presence in AIP Italia part AD2 concerning the airports of Ancona and Bologna, of the following remark: *"In order to verify the effectiveness of electromagnetic waves regarding birds evacuation from manoeuvring area, pilots are requested to activate meteo radar equipment before take-off and landing"*. While the report at page 98 quotes a change of the FCTM (Flight Crew Training Manual) Boeing 737, made by the manufacturer further to the accident, that reiterates the well-known evidence: *"The use of weather radar to scare birds has not proven effective"*.

The investigation found out that the airport operator, through its BCU (Bird Control Unit), performed only three daily inspections at the time of the accident. By contrast, both the ENAC Circular APT 01A in force at that time and the IBSC (International Bird Strike Committee) 2006 Recommended Practices already established substantially different measures. The former in fact required *"continuous vigilance"* while the latter recommended *"a properly trained and equipped bird/wildlife controller should be present on the airfield for at least 15 minutes prior to any aircraft departure or arrival. If the aircraft is landing or taking-off at intervals of less than 15 minutes there should be a continuous presence on the airfield throughout the daylight hours"*.

While it must be said that the Ciampino operator after the accident, and without waiting for the investigation conclusions, radically intensified the frequency of inspections, however the BSCI (part of ENAC) 2016 report highlighted that about 40% of the national airports still declared to carry out from 1 to 6 daily inspections of the manoeuvring area.

Another critical point that (does not) appears from the report is the **involvement of all the stakeholders** on the airport scene for prevention purposes, with particular reference to Air Traffic Control, which is in Ciampino under the responsibility of the Italian Air Force. To be honest, the criticality remains the same even when the service is carried out by ENAV spa.

One of the questions that should have been asked in fact is the following: could (or should have) the TWR controller directly observe and identify the movements of the flock and take proper measures, first of all informing the crew, or even revoking the landing clearance?

And before that, could the flock be seen and what consistency did it have? With regard to this the report uses vague adjectives such as *"thick"*, *"large"*, the co-pilot of the flight describes it as *"huge"*; on the afternoon of the day before the BCU had removed about 1300 starlings by exploding 35 shots of blank cartridges. These birds regularly concentrate every winter in the downtown Rome area where they spend the night in urban perches, which they leave in the morning in large flocks in search for food in the surrounding countryside and vice versa in the late afternoon. In this phase, it is customary to see them reunite in large groups on flat grassy areas in search of food; during this activity, they generally fly with vertical movements from and to the ground, maintaining more or less the same position, until they move towards their final destinations. This generally happens in the early morning or late afternoon before sunset.

This is exactly what was observed, and photographed, by all the eyewitnesses the day after the accident in the northern part of the airport. Moreover, after their gathering, the starlings often cross the flight paths of aircraft, flying over the threshold 15 and the northern runway extension.

Considering the number of impacts found on the airframe (86) and inside the engines (55 + 30), together with the number of birds found dead on the ground, one can reasonably conclude that the flock was visible from the TWR (and not only) at least in the moments in which it performed the vertical movements in proximity to the runway threshold. The report assumes that the flock settled on the ground in the interval between the landing of the previous flight and that of the B737, which lasted 4 minutes. **In this period, with the B737 on final, the controller should have looked towards the threshold 15 and notice the movements of the flock.**

However, on p. 80 of the report the following sentence appears: *"With regard to the surveillance activity of TWR personel, the applicable regulations show that the above surveillance functions are strictly connected with the provision of the ATS service, and not intended as a mere activity of surveillance of the surrounding environment. Therefore, in the absence of any condition preventing landing, there were the conditions, at the time of first radio contact, to give the RYR41CH the landing clearance. "*

This sentence is of equivocal formulation because if it is true that the TWR must not - and cannot - take the BCU's place in the surveillance of the surrounding airport environment, it does not underline the fact that the CTA **is obliged to look outside** towards the glide path and the runway during the final approach of an aircraft. Moreover, this is precisely established in order to identify possible conditions that would prevent a safe landing (conditions that he/she can see better than anyone else).

The report correctly mentions in this regard the ICAO DOC 4444 (2007 edition) para 7.1.1.2 and 7.4.1.4, which establish that:

§ 7.1.1.2 Aerodrome controllers shall maintain a continuous operation on the aerodrome as well as vehicles and personnel on the manoeuvring area. Watch will be maintained by visual observation, in low visibility conditions by the ATS surveillance system when available.

and:

§ 7.4.1.4.1 In the event the aerodrome controller, after a take-off or a clearance has been issued, becomes aware of a runway incursion or the imminent occurrence thereof, or the existence of any obstruction on or in close proximity to appropriate action to be carried out as follows:

a) omissis

b) instruct to landing aircraft to execute a go-around or missed approach;

c) in all cases inform the aircraft of the runway incursion or obstruction and its location in relation to the runway.

Note. - Animals and flocks of birds may constitute an obstruction with regard to runway operations. In addition, an aborted take-off or a run-off after touchdown may expose the airplane to the risk of overrunning the runway. Moreover, a low-altitude missed approach may expose the airplane to the risk of a tail strike. Pilots may, therefore, have to exercise their judgment in accordance with Annex 2, 2.4, concerning the authority of the pilot-in-command of an aircraft.

Does not mention instead the § 7.5.2 when it states, *ad abundantiam*:

§ 7.5.2 Essential information on aerodrome conditions shall include information relating to the following:

..... ..

f) other temporary hazards, including parked aircraft and birds on the ground or in the air.

even if this last obligation is excluded if a similar warning has already been known by the pilots via NOTAM or ATIS.

In the specific case, however, **no NOTAM or other information tool about the presence of birds were in place**, which in any case would have been of little help, given the vagueness of such notices.

Therefore, the statement of p. 80 does not find adequate explanation in the light of the applicable legislation, which prescribes exactly the opposite.

The report also quotes the statement of I-DEAC aircraft pilot, who, while taxiing towards the "A" taxiway, observed some birds settled on the ground that had "slightly" taken-off at the right side of the runway extension. During this phase the B737 was on short-final and the birds were moving, but the pilot kept this information for himself and did not report it to the TWR Controller, which for his part, either at that moment was not looking outside, or if he/she even saw the birds, did not adopt any decision.

Incidentally, the same pilot of I-DEAC would have been obliged to report the sighting of the birds:

§ 7.4.1.4.2 Pilots and air traffic controllers shall report any occurrence involving an obstruction on the runway or runway incursion.

In light of the previous considerations, one would expect a recommendation to all regulators, including ENAC, in order to remind operators about the need of **strict observance of ICAO regulations on the obligation to report wildlife, with particular reference to the action and responsibility of the TWR.**

It is clear that this requires a specific training and the involvement of the whole ATC organization and it is exactly what the ICAO recommends in the DOC 9137 part III:

§ 12.3.4 Clear and precise procedures should be developed for air traffic control, and controllers should be trained such that they are able to give specific and timely information to pilots and wildlife control crews to avoid identified hazards.

Recommendations that, at least in Italy, have remained "dead letter".

Considering some ANSV statements, perhaps it would also be the case to definitively clarify **the role of ATC with respect to the wildlife** problem, given the very different interpretations that individual States have given to the DOC 4444, and the ways in which this role should be carried out (1).

The environment

The report devotes much space to the aircraft and the flight crew but almost nothing to the environment where the Rome Ciampino airport is located, which instead presents features that would have been worthy of attention.

The airport is in fact surrounded by human settlements that certainly provide food for some species. Moreover, the Capannelle racetrack, with stables and horses, and with two gallop tracks right under the landing path for runway 15, certainly favours the presence of birds.

The racetrack was run by a private company, the Gestione Capannelle spa.

Here the grass is generally kept low and occasionally, after the races open to the public, the birds may find plenty of food. Around the racetrack there are also many trees that provide natural perches for birds. The approach light system (ALS) located on the ground on the runway extension, and in particular on the horse training track, can be considered an ideal perch. The huge open space of this equestrian structure is also a strong attraction for birds, just like the airport: both are in fact used to directly find food, while the trees are a collecting point before the daily search of food in the countryside, and, on the way back, before going to the night perches downtown.

A few kilometres west of the airport, the great Appia Antica Park provides large extensions of cultivated fields and trees.

According to the testimony of a Ryanair commander based at Ciampino, *"A common practice was for the birds in transit to use the racetrack area immediately beyond the airport boundary fence as a form of gathering/collecting point en route where they would group up. In this context large numbers of birds could be seen resting/feeding around the airport boundary both on the airport grass and on the ground and in the trees of the race track area."*(2)

(1) See Battistoni V. – Does the ATC have a role in the wildlife strike prevention? – WBA Warsaw Conference 2018 http://www.worldbirdstrike.com/images/WBA_2018_Conference/Presentations/PL02-02_BATTISTONI_WBA2018.pdf

(2) Cpt. Malcom Ducret was a Ryanair Base Captain at Ciampino from April 2006 to June 2009. A group of technicians and lawyers who conducted a private investigation on behalf of the airline collected his testimony.

A professional ornithologist, appointed by the airline, commented as follows: *"The area of the Capannelle and the spots of nearby trees constitute both a feeding area and a collecting area (pre-roost) during the formation of the dormitories. Certainly the establishment of new dormitories and the increased number of birds in the existing dormitories near the airport in recent years is also due to the removal of starlings from some areas used as dormitories within the city of Rome "*. (3)

The advisor ornithologist of AdR commented, *"Huge concentrations of starlings are not a surprising or unpredictable event"*. (4)

The problem was therefore well known but there were no actions taken by the airport authorities towards the racetrack managers. Ciampino had the status of military airport open to civilian air traffic. Besides a direct responsibility as provider of the ATC service, AMI (i.e. the Ministry of Defence) was therefore also responsible as Airport Authority for the combined provisions of Articles 710 and 711 of the CdN.

The Navigation Code establishes (Article 710) that the Ministry of Defence in military airports is responsible for the same tasks and duties as those of ENAC in civil airports; in particular "c) the imposition of limitations and the issue of authorizations pursuant to art. 711 (*"... are subjected to limitations the works, plantations and activities that are a potential attraction for wildlife or somehow a danger to air navigation.*) And "e) ... *for the elimination of the dangers as referred to in Article 714 "*.

It is therefore not excluded that the inertia of the two authorities could be derived from a confusion of roles and competences, reason why a recommendation by the ANSV would be desirable, aimed in general at achieving **greater attention to the spaces outside the airport, with supervisory actions and coordination with the various local bodies and individual landowners**. While it is true that ENAC autonomously emphasized this aspect in its circular letter APT 01B of 2011, however, the above recommendation would have been useful for the still promiscuous airports, where the military authority could sometimes not immediately identify such duties as primary for safety purposes.

Warning signs and collateral aspects

The investigation report highlighted another interesting aspect: the flight Captain stated that *"the probability of having a problem with both engines on approach is remote and was not even considered at the time of events (p. 65)"*. This opinion is unfortunately widespread also today, but unlike past years, there are now certain and documented data of **dual ingestion** or at least simultaneous ingestions of birds in more engines of the same aircraft.

In fact, between 1988 and 2018 there were 52 cases of dual ingestions, fortunately not all ended as the USAir flight, forced to ditch on the Hudson River. Nine of these have occurred in Italy, including the event we are talking about and the aforementioned episode of Delta in 2007.

There are therefore the conditions for ANSV to send a strong appeal to the international regulatory authorities to begin to take these occurrences seriously.

On p. 54 the report states that the Flight Assistant no. 1 affirmed that she had tried to communicate to the Fire Brigade the need to have stairs instead of the slides but they did not speak English. The procedure was commented as *"very slow"*.

The report meanwhile says nothing about the timing of the intervention of the Fire Brigade and the communications between the TWR and the firefighting vehicles, omitting to specify which and how many vehicles had intervened. Fortunately, there were no reasons to speed up the evacuation procedures, but there is no doubt that the lack of communication due to problems of language comprehension constitutes a handicap in the rescue procedure. Also in this case, it would be reasonable to expect a recommendation to the Ministry of the Interior so that at least one operator of the airport rescue team knows English. In a correct view of Safety Management System, this gap should be considered as a warning signal.

(3) Dr. Roberto Tinarelli – Ornithological Report - 20 January 2009.

(4) Dr. Alessandro Montemaggiore – "Report on birdstrike situation at Ciampino Airport – 19 November 2008

Returning to the problem of the role and action of the ATC service with regard to the prevention of wildlife strikes, it should be remembered that it cannot be considered primary as compared with the duties of the airport operator. However, according to ICAO regulations, it can and must offer a valid contribution to the safety of airport operations, within the limits of the operational capabilities of the service and of the controller.

In order to deal with the human deficiencies, basically the visual ones, the use of **avian radars** is spreading worldwide, that means instruments specially designed to identify distant flocks (but also individuals) of birds and to trace and forecast their flight paths. The report unfortunately does not mention at all, and obviously does not recommend, the adoption of these fundamental tools, destined in the near future to spread on a large scale, at least in the most important airports.

A recommendation to this effect was instead curiously stated in the report, formulated by the Authority of Nigeria following an accident that occurred on the island of Sao Tome and Principe: *"Should install specialized ground-based radar equipment used for tactical detection of large flocking birds "(5).*

The airport of Sao Tome is definitely much smaller and less busy than Rome Ciampino, and perhaps it would be sufficient to adopt more efficient detection and dispersal procedures. The fact that even in those remote and minor airports avian radars are a matter of discussion should sound like an alarm bell for us, who do not talk at all about them, even having in Italy airports that receive tens of millions of passengers.

Finally, it would be appropriate to discuss the question of the dissemination of the investigation reports following accidents or serious incidents. If they certainly arrive to the top management of the regulatory bodies, airlines, air navigation providers and probably airports, there are strong doubts about whether they also arrive to the bottom of these organizations and whether they are analysed, discussed and become objects of training.

If so, a previous event that has strong similarities with this one would certainly have been remembered by the CTA and the pilots of Ryanair that even has a solid tradition of attention to bird strike issues.

In 1996, a Belgian military Hercules C130 crashed on Eindhoven airport after a bird strike with ingestion of starlings. On that occurrence, just before landing, the TWR observed the presence of a flock of starlings. The birds had first settled on the runway and its surrounding areas and the TWR controller thought that they had been dispersed by the bird control team that had been called for that purpose. Before the landing he visually inspected the runway again without noting that the birds, about 600, as then resulted during the investigation, had instead in the meantime moved on the grass around the runway threshold; the C130 was therefore cleared to land. The flock took off immediately before the aircraft touchdown and many birds were ingested causing the loss of thrust to three out of four engines. The aircraft, which had tried to go around after the impact, crashed on the runway causing the loss of human lives.

Maybe there would have been one less accident to investigate.

(5) The final report on this accident may be downloaded from this website in the page of the news of 2019.