

## **MANDATORY STRIKE REPORTING – THE TIME HAS COME**

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### **Abstract**

The reporting of wildlife collisions with aircraft in almost all places, worldwide, is voluntary. As a result data with which to design, manufacture and operate aircraft to mitigate this hazard is poor. Voluntary reporting of strikes has resulted in data collection rates in the USA of around 20%, but only 4% of reported strikes contain complete data such as bird species. Aviation manufacturers also agree that collection of strike data is difficult, incomplete and without an industry best practice. Air carriers, when research is done, are amazed to find that strike rates may be eight times higher than their normal collection methods demonstrate. The USA safety agency, NTSB, has recommended that wildlife strike reporting be mandatory. Reporting methods and databases, in the USA and Canada, are already in place. ICAO maintains a strike database for states worldwide, but participation is poor. While the cost of mandatory reporting is often cited as a reason for not implementing mandatory reporting, the cost of not reporting is higher. Since 1995 over 130 people, worldwide, have lost their lives to collisions between wildlife and aircraft. Air carriers lose, each year, US\$1.2 billion. If carriers reduced this loss by only 25%, the savings to carriers each year would be US\$300 million. Without adequate data neither the location, nor the frequency, nor the type of problem wildlife can be adequately identified. Neither adequate aircraft design nor operating techniques can be developed without data. Voluntary reporting has not worked: it's time for mandatory reporting of data.

## **1. Introduction**

Wildlife collisions with aircraft cost airline operators approximately US\$1.2 billion a year, worldwide. Since 1995, worldwide, over 130 people have lost their lives as the result of collisions between their aircraft and wildlife. Populations of large birds are increasing geometrically worldwide. Commercial aircraft are not designed, constructed or certified to withstand collisions with these large birds, particularly at high speed.

## **2. Data collection is vital**

**2.1** Certain design assumptions are made regarding the construction of modern aircraft airframes and engines. These design assumptions generally consider that an aircraft will encounter certain numbers of birds of certain weights. While the accuracy of these assumptions is beyond the scope of this paper, nevertheless accurate data must be used to reach design assumptions which will allow an aircraft to survive an encounter with a typical bird flock.

**2.2** Mitigation of wildlife hazards at airports must be based upon accurate knowledge of the type and location of troublesome wildlife. A program to mitigate starling roosts will obviously have no effect on the presence of gulls.

**2.3** Operation of aircraft to reduce the likelihood of collision with birds also must be based on accurate knowledge of the threat likely to be encountered.

## **3. Databases available**

**3.1** Currently several bodies maintain databases collecting information regarding wildlife strikes with aircraft.

**3.2** ICAO (International Civil Aviation Organization) currently maintains its IBIS strike database. This database compiles a record of strikes reported annually by ICAO member states to ICAO. This reporting is voluntary and there is no Standard or Recommended Practice advocated by ICAO calling for the reporting of strikes. This database is woefully incomplete, e.g., although wildlife strikes are reported as occurring in over 110 states worldwide, only around 50 states make annual reports to ICAO. There has been press coverage in the past alleging political manipulation of the data being submitted as being inaccurate or minimized to reduce the appearance that the reporting state tolerates an aviation hazard.

**3.3** Certain national government agencies, e.g., Transport Canada, the US FAA, also maintain strike databases. Reporting of data to these two databases is currently voluntary.

**3.4** Private organizations, such as engine manufacturers, airframe manufacturers, industry trade groups, also maintain strike databases. However, as was discovered during the recent work done by the Engine Harmonization Working Group – Bird Ingestion Task Group, these private databases match neither government databases nor other private databases. Data is voluntarily reported to these industry databases by manufacturer's customers or compiled by industry employees as they discover data. During two periods when the FAA paid industry to compile birdstrike records, the number of reported bird ingestions to engines virtually tripled during the first period (1985-1987) and doubled during

the second period (1989-1991). When no further federal funds were available for manufacturer's representatives to gather data the number of reported ingestions returned to its previous level.

#### **4. What current data tells us and doesn't tell us**

**4.1.1** Using as an example the US FAA Wildlife Strike Database, maintained by the US Department of Agriculture-Wildlife Services, under an interagency agreement with FAA, we are able to ascertain the following information:

**4.1.2** Of the more than 40,000 reported strikes (from 1990-2001) in this database the most commonly reported bird causing the strikes was missing. In 56% of the reported strikes during this 11 year time period, no bird identification was given in the report. Only 4% (four percent) of the 40,000+ strikes in this database contain complete bird identification. In strikes with a human fatality or injury, only 34% of these reports identify the type of bird struck.

**4.1.3** Reporting to this FAA database is voluntary.

#### **5. Data available but not used**

**5.1** Other private databases also contain significant data regarding the risk and cost of wildlife collisions. The United Air Lines FOD (foreign object damage) Manager, Alex Orosz, wrote a key word search program for the Technical Operations database at UAL. His search indicated that 50% of engine FOD at United was being caused by bird ingestion.

**5.1.1** Other airline managements have been shocked and amazed by this finding at UAL. However, no other airlines have engaged in data searches such as the UAL study.

#### **6. Safety agency recommendations**

**6.1** In 1999 the US National Transportation Safety Board issued seven recommendations to help mitigate wildlife hazards to aviation. Recommendation A-99-091 urged the FAA to require that "...all airplane operators..." report wildlife strikes.

**6.2.1** In August 2002, the Australian Transportation Safety Board, in a special report on wildlife hazards in Australia, concluded that "Higher birdstrike reporting rates would enable a more thorough understanding of the problem, and would allow for the development of more effective bird control and management techniques. It is important that all strikes are reported to the ATSB..."

#### **7. Arguments against mandatory reporting**

**7.1** Considerable debate has been had among industry participants as to impediments to mandatory reporting. Some of those arguments include: "I cannot conceive of a method for mandatory birdstrike reporting". "...over 50% of damaging events require follow-up to obtain needed data". "There has not yet been identified a best practice for reporting of strikes".

## **8. Arguments in favor of mandatory reporting**

**8.1** Likewise, several arguments have been put forward by industry in favor of mandatory reporting: "...most of the quality/quantity in reporting statistics is the result of field reps, not the operators..." "We can't make a realistic judgment on size without some specific identification". "We need specifics in our reports, whether the bird was ingested or only struck the engine cowl".

## **9. FAA response to NTSB recommendation**

**9.1** The FAA declined to take action to implement mandatory reporting of wildlife strikes as requested by the NTSB. Comments in justification of their action included: "...the proposed regulation would be difficult to enforce..." And, "We are unsure what sort of sanction would be appropriate if a pilot failed to report..."

**9.2** It should be pointed out that the NTSB recommendation was directed toward the airlines themselves, "airplane operators", as opposed to individual crewmembers. The intent was to use all assets an air carrier has to compile and report data, e.g., a pilot may be unaware that he has struck a bird, but a mechanic may discover an impact point during his inspection of the aircraft. The airline would report the strike which otherwise may go unreported.

## **10. New safety cultures developing**

**10.1** As a result of several safety initiatives throughout the industry, new types of safety 'partnerships' are developing. The idea of these partnerships is to seek trends and implement solutions before catastrophic events take place. These new partnerships, new cultures, are based on the gathering of data indicating an unsafe trend or activity is taking place. Data is gathered in several methods.

**10.2** FOQA – Flight Operations Quality Assurance – uses data from the aircraft flight data recorder to observe actual line flights. Based upon actual observed data in how aircraft are being operated, as opposed to how they were thought to be operated, can lead to changes in operating techniques to eliminate problems. Examples: at Northwest Airlines flap extension speeds on Airbus aircraft were changed to eliminate flap extension overspeed events. On the B-757 handling techniques near the ground were changed to eliminate tail strike events.

**10.3** ASAP – Aviation Safety Action Partnership – Aviation personnel at airlines participating in this program can "self-report" mistakes or other potential hazards without fear of punitive action by either their employer or federal regulators. Examples: approach procedures, which lead to unstable approaches, can be changed to either modify or refuse air traffic control clearances to ensure stable approaches. In maintenance, failure to perform routine inspections can be reported to identify and correct staffing or assignment problems.

**10.4.1** These new partnerships are cooperative, non-punitive data collection efforts for increased safety. These partnerships seek trends using data and implement solutions before events.

## **11. Old safety culture**

**11.1** The FAA's response to the NTSB recommendation is an example of the old safety culture. This older culture valued punitive action that naturally stifled the free exchange of safety information. This culture is reactive, not pro-active: in other words, wait for the event to take place, then fix the problem after the accident. This culture is not data driven but rather event driven.

## **12. Conclusions**

**12.1** Voluntary reporting is incomplete.

**12.2.1** Mandatory reporting will identify trends for mitigation prior to hazardous events. Mandatory reporting will provide the data for changes in design, manufacturing and operations of transport aircraft.

## **13. ALPA, international position**

**13.1** Wildlife collisions with aircraft represent a hazard to the safe operation of aircraft. Aircraft must be designed, built and operated in a manner which mitigates this hazard. Data with which to design, build and operate aircraft in light of this hazard is incomplete due to the absence of complete reporting. Therefore it is ALPA, Int'l AGE's (Airport Ground Environment) position that the reporting of all wildlife strikes to aircraft must be mandatory.

## **14. Reporting opportunities**

**14.1** Websites already exist in some nations for the reporting of strikes. Australia, Canada and the US have online reporting. Additionally strikes can be reported by mail via government form or by telephone. Other nations, such as Germany, Italy, Panama, have websites which could be modified to record strike data.

**14.2.1** Reports of wildlife strikes or hazards should be submitted by all parties in aviation: pilots, mechanics, station personnel, airport personnel, air traffic controllers, airplane owners, and aircraft manufacturers. Multiple reports of the same event are welcome as each report generally adds new data.

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