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New Peril + Old Promises = Bad Results

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By Captain Paul Eschenfelder

As the Delta Air Lines B767-400 taxied out in Rome's Fiumicino Airport the flight crew clearly saw the flocks of gulls on and around the departure runway. The crew discussed the presence and number of birds. The crew did not notify the air traffic facility on the airport, did not contact Delta operations, and did not call for a bird scare prior to takeoff. They did, however, note that they were over an hour late and decided to engage in pilot folklore as mitigation. The pilots reasoned that the birds would hear the engines spooling up and get out of the way. Or that the birds would see their lights and move. Or that once the airplane started its takeoff role, the birds would have sufficient time to get out of the way. They were wrong.

The B-767 struck multiple flocks of birds during its takeoff run and liftoff. Numerous birds were ingested into both of its CF6-80 engines. The digital flight data recorder would later show both engine traces at maximum deflection for vibration; one engine trace would stay pegged for the entire flight. The airplane was at its maximum takeoff weight having 277 passengers and 11 crew on board. Indeed the captain would later tell me that the airplane was so heavy and shaking so badly he did not think they could make it back. But they did. Everyone was safe. The engines were both trashed and it was a $10 million event for Delta. But everyone was safe. The date was July 7, 2007 - one and one-half years before the famous 'Miracle on the Hudson' crash, caused by birds, into New York's Hudson River.

Early in the predawn morning at the Black Sea resort town of Bourgas, Bulgaria, the Balkan Holidays flight crew conducted a thorough pre-departure briefing. Their A-320 aircraft, with CFM56-5A3 power, was slated to fly 169 Britons home to Manchester after their holiday. The twilight dawn did not provide sufficient light during the takeoff roll for the crew to see the flock of gulls just above the runway until they struck them. There were hits all over the aircraft and multiple birds were ingested into both engines. Despite severe engine vibrations the crew executed a 90-270 turn and landed opposite direction on the departure runway. Everyone was safe. The aircraft and engines were heavily damaged, but everyone was safe. The date was August 3, 2008 – six months before the famous 'Miracle on the Hudson' crash into New York's Hudson River.

Departure isn't the only perilous time, it seems. A Ryanair B737-800, with CFM-56 power, was approaching Rome's Ciampino Airport, the smaller of Rome's airports, when it encountered a huge cloud of starlings. Starlings are known as 'flying bullets' because their body mass is so dense. The crew did what they had been trained to do when facing a problem: go around. Unfortunately, in this situation, it is exactly the wrong thing to do. As they pushed the throttles forward both engines lost thrust. The crew found themselves out of power, out of altitude, out of airspeed and out of ideas at the same time. The airplane was pancaked onto the runway. Damage was so great with collapsed main landing gear, tail strike, bird hits all over the airplane that it was written off as a hull loss. But everyone was safe. The aircraft was destroyed but everyone was safe. The date was November 10, 2008 – three months before the 'Miracle on the Hudson' crash into New York's Hudson River.

Focus was returned to the bird threat to aviation after the Hudson River crash on January 15, 2009. But to what extent? Three weeks after crashing into the Hudson River the flight crew testified before the U.S. Congress, which had rushed to hold a hearing on the disaster. In his testimony the captain of the flight informed Congress that "…birds are not a problem for modern jet aircraft." In education we would term comments such as this as indicative of a flat learning curve. Strangely enough, FAA administrators, who also testified, backed up this view. The FAA testimony centered on the idea that this was a 'one-off' event: crashes due to birds are so extremely rare they said. Obviously at variance with the facts.

The situation is not improving. In the U.S. we suffered 4 catastrophic accidents due to birds in 16 months. The aircraft destroyed represented the spectrum of aviation: airliner, business jet, twin piston, transport helicopter. The bird spectrum was also replete: geese, pelicans, raptors. The above case studies also included gulls and starlings. And demonstrate that the problem is worldwide. Sadly, our mitigation does not seem to be effective. Not only is the accident rate not declining but, in July, 2012, the DOT's Office of Inspector General released the results of its audit of the FAA's wildlife control efforts. Despite having spent over $450 million in the last 15 years it was determined by the Inspector General that "…FAA has not effectively implemented its wildlife hazard mitigation program."

What to do? Shall we build a newer, stronger, more robust engine? Apparently design focus is in the opposite direction. Considering that the new higher-bypass engine inlets, or bird scoops as we say in the trade, will be about 27% larger than the current generation's engines things don't bode well for the bird and engine peril. Imagine most aircraft in the future having inlets almost the size of those on the Fedex MD-11 which, in March, 2012, encountered geese in its climb at 8,000. The MD-11 ingested geese into 2 of its three engines and limped home on one. What if it only had two engines?

And the bird ingestion test? Passé? Our current standards are only for a four pound bird in mid-sized engines. And then success is not run-on, but safe shutdown. One has only to scroll up a few paragraphs to appreciate the impact, literally, of dual engine ingestions resulting in safe shutdown. Consider that, in North America, we now have over 36 species of birds which weigh more than four pounds. These populations have increased geometrically for the last 30 years. Consider further that most of these birds are social and exist in flocks, sometimes large flocks. Large birds, large flocking birds, old rules. Not a good combination. Can an engine that can swallow an eight pound goose and survive be built? If so, could it also be sold?

If we can't out-muscle the birds then we are going to have to outsmart them. We must find new ways to separate aircraft from birds. As the DOT Inspector General says, the current path is 'ineffective.' We need new thinking. We need new partnerships. We need new solutions. And we desperately need new leadership. Who will it be? Too many today shrug, surrender and say 'what to do?' Instead let us roll back the clock 2,000 years and lean on the wisdom of Seneca: "It is not because things are difficult that we do not dare; it is because we do not dare that they are difficult." *

Captain Paul Eschenfelder is an adjunct professor at Embry Riddle Aeronautical University. He is retired after a 40 year flying career which included 20 years in the U.S. Navy regular and reserve fleet and 31 years as an airline pilot. During his flying career he operated a gamut of engines from the R-1820 to the Pratt 4,000 series, including the Alison 501, JT-8D, CFM56 and Pratt 2,000 series. As an aviation safety advocate he participated in the FAA/JAA Engine Harmonization Working Group which wrote a new standard for large engines. He served two terms on the Secretary of Agriculture's Advisory Committee, helping the USDA develop another line of business: airport wildlife control. As a member of the FAA's Research & Development Advisory Committee for Airports (REDAC) he helped obtain funds for research and development of airport wildlife mitigation strategies. He recently was the lead instructor for the DOT's Safer Skies for Africa program providing training in West Africa for airport wildlife control. In his spare time he works in the Entertainment Department for various cruise lines, lecturing on board cruise ships on history and aviation matters.