

Des Barker Report 2023

Airshow Incident and Accident Review

This report does not seek to pass judgement on airshow accidents other than reporting on information in the public domain in an effort to identify and alert the airshow community worldwide, to accident trends in airshow safety, and propose methods for enhancing excellence.

Introduction

The current report is a continuation of the legacy that Des Barker left to the international airshow community. All efforts will be taken to provide an annual accident and incident review of the previous display season in the same format as the one Des was working with, including comments provided in the final investigation reports, without any attempt to put blame, but rather to share lessons learned.

2023 Statistical Overview

Figure 1 provides an annual airshow incident/accident total, and upon analyzing the data, one could posit that 2023 was not one of the safest years in the history of airshows. Yet, with 16 identified or recorded accidents, this number is lower than the historical average of 23 accidents per year over the past 20 years.

However, the interpretation of this data is subjective and depends on the context. When considering the entire history of airshows over the past century, this number is low and indicates a positive trend toward a safer airshow community. Nevertheless, a closer analysis of the data reveals that the number of accidents in 2023 increased to the pre-pandemic levels in 2019, with 15 recorded incidents or accidents. This trend is concerning, and it is crucial to evaluate the safety protocols and procedures in place to ensure the safety of all involved.

Moreover, the gradual resumption of airshow events in 2023 after the pandemic-induced hiatus could have contributed to the increase in accidents. The influx of participants and crowds attending airshow events, as well the increased publicity by social media could have increased the pressure to the airshow performers and organizers, and therefore the likelihood of accidents occurring. Consequently, the airshow community must remain vigilant and prioritize safety to reduce the number of accidents.

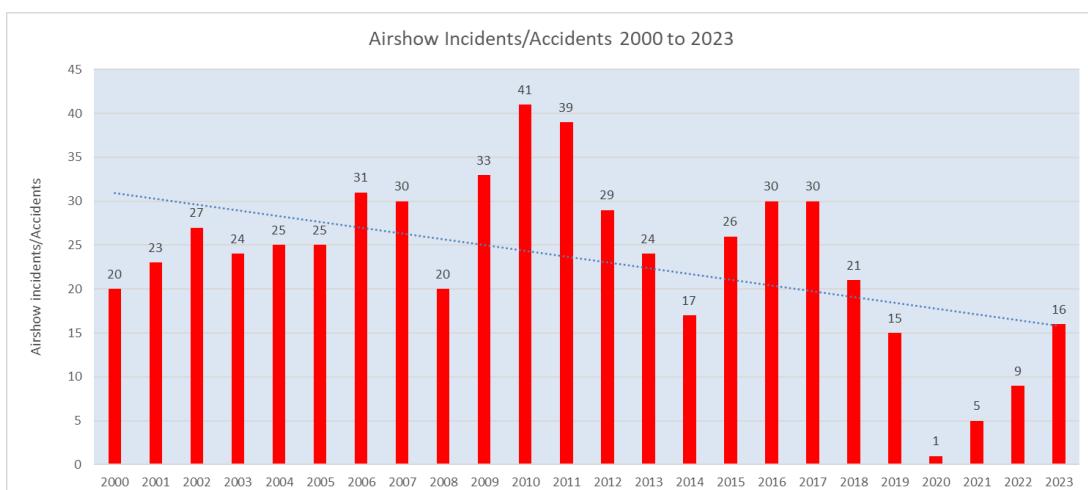
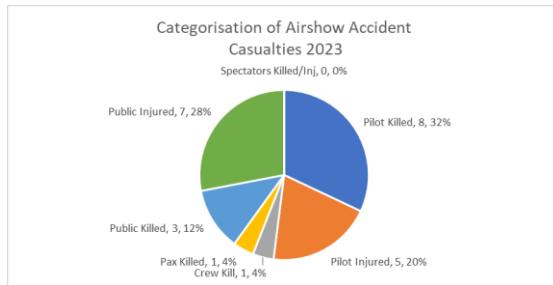


Figure 1, Annual Airshow Incident/Accident, 2000-2023

Casualties

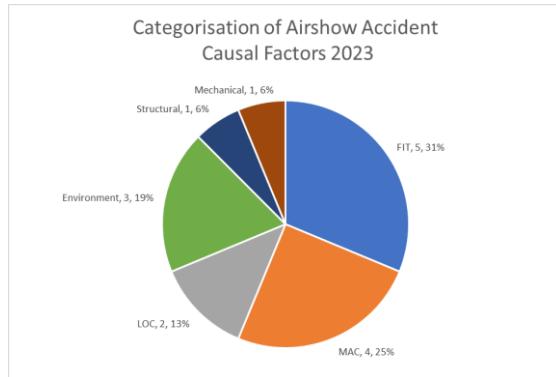


In 2023, the airshow community witnessed a decline in pilot fatalities compared to the historical average, with the number of pilots killed in accidents dropping to 8, which is well below the annual average of 13. This suggests an improvement in safety measures and timely decisions for ejection, which resulted in a 32% share of the total casualties, according to the provided pie chart. Pilot injuries also accounted for a significant portion of the casualties, with 5 pilots injured, making up 20% of the total. These figures indicate a positive trend in reducing pilot fatalities, though the occurrence of injuries remains a concern.

The chart above mainly brings to attention the repercussions of airshow accidents on non-performers. Members of the public injured in these events constituted 28% of the casualties, numbering 7 individuals. More alarmingly, there were 3 deaths among the public, equating to 12% of the casualties, a statistic that underscores the risks posed to spectators and underlines the critical need for enhanced protective measures. This data reflects a pressing issue within the airshow industry: while pilot safety seems to be improving, the safety of the viewing public demands urgent attention to mitigate risks and prevent such tragedies.

As Des Barker stated in his 2019 report, *"Fatalities remain untenable, and if the airshow community is to continue to exist without regulatory and insurance interventions that would impose additional constraints on the ability to host air events, airshow accidents must decrease."* Sponsors are not typically supportive of events in which fatalities occur, which is damaging to their brand.

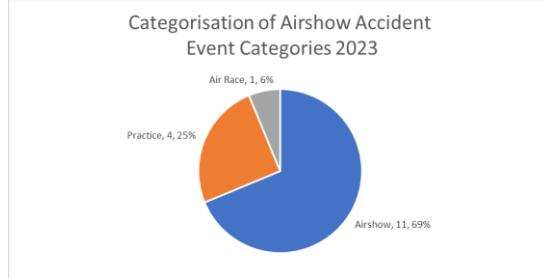
Causal Factors



In 2023, the landscape of airshow accidents was marked by a variety of causal factors, with flight into terrain (FIT) incidents being the most prevalent at 31%. These were followed closely by mid-air collisions (MAC), which accounted for 25% of accidents. Environmental factors, including bird strikes and adverse weather conditions, were responsible for 19% of incidents, slightly higher than the previous year. Mechanical and structural issues were relatively infrequent, each contributing to 6% of the total accidents. This suggests that while operational challenges remain a significant concern, technical failures are less common, possibly due to stringent maintenance standards and adherence to aircraft limitations by display pilots.

The year-over-year analysis indicates that while some improvements have been maintained, such as the continued low rate of mechanical and structural failures, other areas, such as FIT and MAC, have seen an increase in incidents; at the same time, bird strikes kept playing a role in contributing to airshow accidents. This comparison underscores the dynamic nature of airshow safety challenges and highlights the need for being extremely vigilant to low altitude aerobatic maneuvering, formation flying practices, and display area's sanitization from birds and drones.

Event Categories



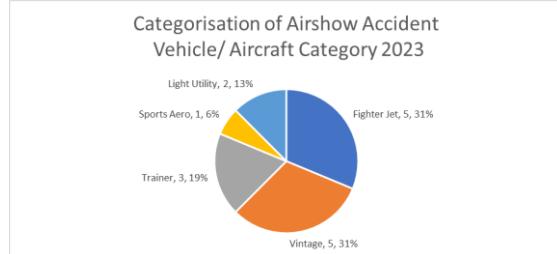
In 2023, the distribution of airshow-related accidents across different types of events paints a complex picture. Airshows themselves were the scene for the majority of accidents, with 69% of incidents (11 in total) occurring during the main events. Practice sessions accounted for a quarter of the incidents at 25% (4 incidents), while air races were the least common context for accidents, with just one incident representing 6% of the total. This distribution signifies a shift from 2022, where a staggering 89% of incidents occurred during airshows and 11% during practice sessions, deviating from the historical average, where 76% of accidents happened during displays and 24% during practice.

However, the distribution of airshow accidents in 2023 underscores a sobering reality for the airshow community. While accidents during practice sessions are recognized as an inherent risk, given the nature of high-risk maneuvers and the necessity of training under realistic conditions, the occurrence of accidents during actual events is particularly troubling. In 2023, the majority of incidents still occurred during public airshows, a stark reminder that despite training, the application of skill and precision to the high-pressure environment of a live event is not without significant challenges. These figures call into question the effectiveness of the training and the extent to which the adage “display as you train” is being actualized.

The presence of a live audience, along with the pressures exerted by media coverage, sponsor expectations, and the internal desire for a flawless performance, introduces additional stressors that are difficult to replicate in a practice environment. Such stressors can potentially lead to a lapse in focus or deviations from standard procedures, resulting in accidents. This concern is amplified by the fact that accidents during shows directly impact not just the performers but also the public, posing

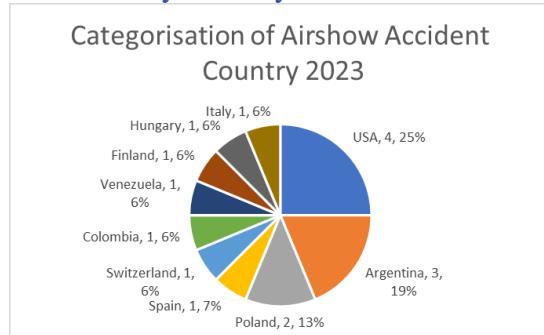
serious safety and liability concerns. The trend seen in 2023 compared to the previous year suggests that while the calculated risks of practice are acknowledged and managed within the community, there is a pressing need to better address the unique pressures of the airshow environment. To enhance safety, it is crucial for performers, FDDs, and organizers to intensify their focus on stress management, comprehensive risk assessment, and adherence to protocols that account for the dynamic and sometimes unpredictable nature of live displays. Only through rigorous preparation, mindful decision-making, and a consistent commitment to safety can the airshow community hope to minimize accidents during actual flying displays and uphold the trust placed in them by all stakeholders involved.

Aircraft Categories



In 2023, the categorization of airshow accidents by aircraft type remained diversified yet showed a slightly different distribution from the previous year. Fighter jets and vintage aircraft each were involved in 31% of accidents, a slight decrease from their combined 72% involvement in 2022. Trainer aircraft were implicated in 19% of the accidents. Light utility and sports aerobatic aircraft together accounted for 19%, with light utility aircraft being more involved than sports aerobatics.

Accidents by Country



In 2023, the landscape of airshow accidents demonstrated not only the geographical diversity of such events but also their

interconnected impact on the global stage. The United States led with 4 accidents, amounting to 25% of the total, while Argentina followed with 3 incidents at 19%. Poland also featured prominently with 2 accidents, representing 13%. Unlike in 2022, when accidents were confined to six countries and notably absent in others, possibly due to a slower recovery of the airshow industry in those regions, 2023 saw incidents spread across a wider array of countries, including Spain, Colombia, Switzerland, Venezuela, Finland, Hungary, and Italy, each reporting one accident.

This wider distribution of airshow incidents across various countries highlights the global nature of the industry and the shared risks inherent to such events. Any accident, regardless of where it occurs, can have a ripple effect across the entire airshow community due to the immediate and widespread dissemination of information through social media. Such visibility often fuels the scrutiny and criticism of airshow skeptics, who may use individual incidents as a basis to question the safety and viability of airshows worldwide. This interconnectedness emphasizes the importance of a united approach to safety protocols and risk management in the airshow industry, as the repercussions of accidents are not limited by national borders but are felt and debated on a global scale. The airshow community must thus operate with the understanding that the safety measures and practices of one country can and do reflect on the industry as a whole, impacting public perception and regulatory responses internationally.

Airshow Safety Rates (ASRs)



Figure 2, BAAR, AFR, and ACR

Des Barker, in his ultimate airshow safety report, envisioned the introduction of an airshow accident rate with the intention of adding more clarity and subjectivity to the airshow community's safety records. To further

expand Des' vision, in 2022's report, three airshow safety rates were introduced, namely the Barker Airshow Accident Rate (BAAR), the Airshow Fatality Rate (AFR), and the Airshow Casualty Rate (ACR). In the beginning, they represented holistically the international airshow industry; yet, in this year's report, regional safety rates are available to highlight possible trends.

While the BAAR is a useful tool, it is important to note that it does not provide a complete picture of airshow safety. The airshow community must consider other factors that contribute to safety, such as the quality of training for air show performers and FDDs and the effectiveness of safety protocols and procedures while promoting a resilient safety culture.

Barker Airshow Accident Rate (BAAR)

Figure 2 shows that in 2022, the BAAR was reported at 1.29 accidents per 10,000 aerial events, which indicates a level of safety concerns within the industry. Moving into 2023, the BAAR has increased to 2.08 accidents per 10,000 aerial events, signifying a notable rise in the number of accidents associated with airshows.

The increase in the BAAR in 2023 prompts a critical analysis of the underlying factors contributing to this rise and calls for a reevaluation of current safety measures and practices. It also highlights the need for sustained efforts in safety management and training within the airshow industry. The use of tools like Airshow - Safety Management Systems (A-SMS) tailored to the scale of operations and the role of safety audits become even more crucial in identifying potential risks and implementing effective mitigations. As the graph (Figure 2) indicates, while there have been fluctuations over the years, the general trend has been towards improved safety. The increase in 2023 emphasizes the necessity for the airshow community to not only continue but also intensify these safety practices to reverse this trend and ensure the safety of all participants and spectators.

Airshow Fatality Rate (AFR) and Airshow Casualty Rate (ACR)

In 2022, the Airshow Fatality Rate (AFR) was recorded at 1.14 fatalities per 10,000 events, which is a measurement of the number of

deaths relative to the number of airshow events and indicates a lower point compared to some of the preceding years (see *Figure 2*). Moving into 2023, the AFR has increased to 1.69 fatalities per 10,000 events. This suggests that there has been an upward trend in the rate of fatalities at airshows, raising concerns over potential safety issues within the industry.

Conversely, the Airshow Casualty Rate (ACR), which includes both fatalities and non-fatal injuries, was higher in 2022, standing at 2.29 casualties per 10,000 events. This rate saw a significant increase in 2023, rising to 3.25 casualties per 10,000 events. The substantial jump in the ACR implies that not only have fatalities risen, but the overall number of both fatal and non-fatal injuries associated with airshows has also seen a marked increase.

The rise in both the AFR and ACR in 2023 compared to 2022 suggests that despite ongoing safety efforts, the airshow community may be facing challenges in maintaining the downward trend observed in previous years. It highlights the need for a comprehensive review of current safety protocols, training quality, and risk management strategies to address the uptick in airshow-related casualties and fatalities.

Regional Comparison for ASRs



The bar graph above presents a regional comparison of safety rates in 2023, displaying the Barker Airshow Accident Rate (BAAR), Airshow Fatality Rate (AFR), and Airshow Casualty Rate (ACR) for three distinct regions: the USA, Europe, and the Rest of the World.

From the graph, it is apparent that:

- The BAAR is highest for the Rest of the World, followed by Europe, with the USA having the lowest rate. This suggests that the USA had fewer accidents per number of airshow events compared to the other regions.
- Regarding the AFR, the trend is similar to the BAAR, with the Rest of the World

showing the highest rate, indicating more fatalities in relation to airshow events in that region. Europe's AFR is lower than the Rest of the World but higher than the USA, which again has the lowest rate among the regions.

- The ACR follows a different pattern, with Europe showing the highest rate, indicating that while fewer fatal accidents may occur, the incidents in Europe tend to result in a higher number of casualties overall. The ACR for the Rest of the World and the USA are lower, with the USA again having the lowest rate, suggesting fewer overall casualties at airshows.

The graph indicates that while the USA leads in safety according to these metrics, Europe and the Rest of the World have higher rates of accidents, fatalities, and casualties. These differences may reflect varying safety standards, operational practices, and regulatory environments across the regions. The data underscores, once again, the importance of sharing best practices and working towards global safety improvements in the airshow industry.

Airshow Excellence Rate (AER)

Another airshow performance index introduced in the 2022 Barker's report was the Airshow Excellence Rate (AER), which captures the quality and excellence of the airshow industry. Therefore, the AER would provide an opportunity to acknowledge the outstanding work of airshow performers and organizers and recognize the positive impact the airshow community has on the aviation industry.

The introduction of the AER would provide a new approach to evaluating airshow performance and promote a culture of excellence across our community and our valuable spectators and sponsors.

AER, Promoting Excellence

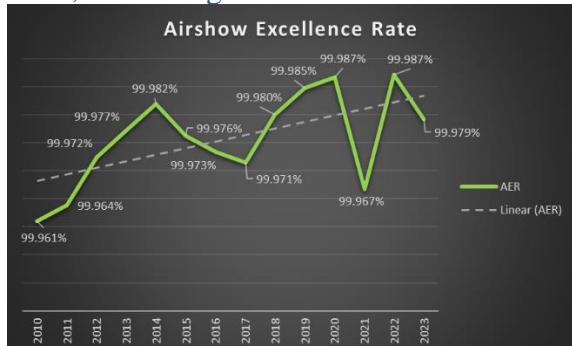


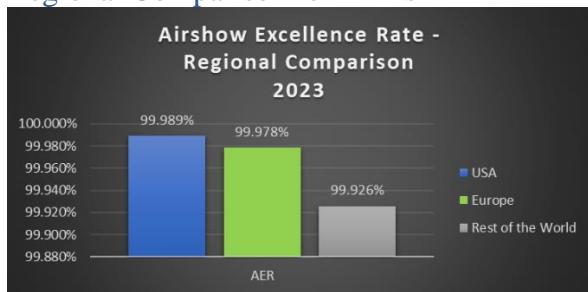
Figure 3, AER

The Airshow Excellence Rate (AER), as presented in the graph (see Figure 3), depicts a slight decrease from 99.987% in 2022 to 99.979% in 2023. This marginal decline indicates a small reduction in the overall excellence rate for airshows, which may reflect a minor increase in the number of incidents or accidents or potentially a decrease in adherence to safety standards or effectiveness of safety protocols at airshow events.

While the difference between the two percentages is very small (0.008%), in the context of airshow safety, even such a slight change can be significant. The goal of achieving the highest possible safety standard means striving for no accidents or incidents, where even a fractional percentage change can represent an important shift.

This small decrease serves as an indicator for the airshow community to investigate the underlying causes and address any potential issues. It may also prompt a reassessment of current safety practices and encourage the implementation of improvements to regain or exceed the previous year's higher excellence rate. The overall high AER across both years, however, does suggest that airshows generally maintain a very high level of safety standards.

Regional Comparison for AERs



The bar chart provides a regional comparison of the Airshow Excellence Rate (AER) for the year 2023. The AER is a measure that reflects the overall performance quality and safety level of airshows. The data shows:

- USA: The AER for the USA stands at 99.989%, which is the highest among the regions compared. This suggests that airshows in the USA are performing exceptionally well, with a near-perfect rate of excellence.
- Europe: Europe's AER is slightly lower at 99.978% but still very high, indicating that European airshows also maintain a very high standard of quality and safety.
- Rest of the World: The AER for the rest of the world is 99.926%, which, while lower than the USA and Europe, still represents a high level of excellence. This rate suggests that there is a strong global standard for air shows, though there may be room for improvement in certain areas to reach the same levels as the USA and Europe.

The regional comparison shows that the airshow industry maintains a high standard of excellence across the board, with very small margins differentiating the regions. The differences might be attributed to various factors such as regional safety regulations, cultural differences, training quality of performers, investment in airshow infrastructure, and possibly the frequency and types of airshows conducted. The high AER values across all regions underline the industry's commitment to delivering quality events that prioritize safety for both the participants and spectators.

How Excellent Were Airshows in 2023? Regional Disparities.

The regional disparities in the Airshow Excellence Rate (AER) for the year 2023 could reflect not just the operational aspects of airshow management but also deeper cultural differences in how safety is perceived and prioritized, the level of oversight by regulatory bodies, and the role of individualism or egoism among performers.

- USA: With the highest AER, this may reflect a culture of stringent safety standards and rigorous oversight. The United States has a mature aviation industry with well-established regulatory

frameworks, such as the Federal Aviation Administration (FAA), which enforces strict airshow safety protocols. Additionally, the emphasis on individual achievement in American culture might also contribute to a high degree of professionalism and personal responsibility among performers.

- Europe: Europe's AER at 99.978% indicates a similarly high standard, which could be attributed to the collective approach to safety common in European cultures. The European Union Aviation Safety Agency (EASA) and other national bodies provide comprehensive oversight. This collective approach might balance out individualistic tendencies and promote a safety culture that's based on shared standards and collaborative improvement.
- Rest of the World: The Rest of the World's AER at 99.926%, while still impressive, suggests there might be variations in the enforcement of safety regulations and possibly in cultural attitudes towards risk and safety. In some cultures, there might be a greater emphasis on the collective or community success over individual achievement, which could affect the dynamics of safety and performance. Conversely, in some areas, less stringent regulatory oversight or a higher degree of individualism could result in a greater range of safety outcomes.

Cultural factors such as the approach to safety, the level of oversight, the willingness to report, and the balance between collective responsibility and individual recognition can significantly influence the AER. In regions where there is less emphasis on individual compliments, the focus may naturally shift towards team success and safety. However, where individualism and personal achievement are highly valued, this might push performers to take greater risks, which can affect safety rates.

The presence of egoism, if unchecked, can potentially lead to riskier behaviors as performers push boundaries to stand out. It's the role of airshow organizers and regulatory bodies to ensure that such tendencies are managed and that the drive for excellence is aligned with the highest safety standards. These cultural nuances are essential for the

international airshow community to consider as it works towards the goal of achieving an AER of 99.99%, with the ultimate aim of zero fatalities and a BAAR below 1.

Accidents and Incidents Overview 2023

1. [4 March, MIG-15 \(Fairhope, Alabama, USA\)](#)

During the Classic Jet Aircraft Association air show in Fairhope, Alabama, the canopy of a Russian Mikoyan-Gurevich MiG-15 jet aircraft unexpectedly detached from the cockpit shortly after takeoff. This incident occurred around 10 a.m. on Saturday, the 4th of March. The air show, which started on Thursday and showcased classic aircraft, experienced this mishap without further detailed consequences mentioned.



Figure 4, MIG-15 (Credit: @mmann_photo)

2. [6 April, RV-7 \(Allen Aeroclub Air Festival, Argentina\)](#)

During the Aeroclub Allen Air Show in Río Negro, a Van's RV-7A experienced an incident where its right wing tip scraped the ground while performing a low pass near the audience. Despite this close call, the pilot was able to regain altitude and subsequently landed the aircraft safely, albeit with damage to the right wing tip.



Figure 5, RV-7 Low Pass, FIT (Credit: Aeroclub Allen)

3. 27 April, PZL-130 (Radom, Poland)

Two PZL-130TC-1 Turbo Orlik aircraft from the “Orlik” Aerobatic Team of the Polish AF collided mid-air near Radom-Sadków airport in Poland. Despite the collision, both pilots managed to land safely. The incident resulted in parts of one aircraft falling onto private property, but fortunately, no injuries were reported on the ground. Social media images revealed severe damage to the tail of one aircraft (identified as 035) and damage to the propeller of the other unidentified aircraft. The press officer of the 4th Training Air Wing in Dęblin confirmed the mid-air contact but stated that the incident did not disrupt the airport’s traffic. The Aircraft Accident Investigation Commission is investigating the incident.



Figure 6, *Orlik, MAC* (Credit: Polish AF)

4. 20 May, F-18 (Zaragoza, Spain)

During an airshow at Zaragoza Airport (ZAZ/LEZG), Spain, a Spanish Air Force McDonnell Douglas EF-18M Hornet, with registration C.15-25 and coded 15-12, belonging to the 15th squadron (Ala 15), crashed. The pilot successfully ejected from the aircraft and was safe, but the aircraft itself was destroyed.



Figure 7, *F-18, Spanish AF, Ejection* (Credit: Zaragoza Denuncia/Twitter)

5. 3 June, C-123 (Geneseo NY, USA)

On June 3, 2023, at the Geneseo Airshow in New York, USA, the last flying C-123 Provider, serial number 54-664 and nicknamed “Thunderpig,” narrowly avoided a crash during its landing in the presence of heavy crosswinds. A critical moment captured in a video shows the aircraft initially exacerbating the crosswind’s impact by holding a significant right aileron, contrary to the wind direction indicated by the windsock. Fortunately, the crew managed to correct this error, averting a potentially serious incident.



Figure 8, *C-123, Almost crashing while landing* (Credit: Allstylesproduction)

6. 15 June, F-5 (Baar, Switzerland)

During a training session on June 15, 2023, above Baar, Switzerland, two Tiger F-5 jets from the Patrouille Suisse, the Swiss Air Force aerobatic team, collided mid-air. The incident caused part of one jet’s nose to detach, subsequently striking a building and shattering windows, which led to minor injuries from glass shards for one person, as reported by the Swiss Air Force. Additionally, the collision triggered the braking parachute of one of the jets, resulting in a rapid loss of altitude for the affected aircraft.

Despite these challenges, the pilot of the jet that lost altitude demonstrated quick and timely reactions, skillfully managing to recover the aircraft and ensuring a safe return to land. All six F-5 Tiger aircraft involved in the session were able to safely land at Emmen Air Base, located 23 kilometers (14 miles) from Baar, with no injuries among the pilots.

In response to the incident, the Swiss military suspended the flight service of the Patrouille Suisse, leading to the cancellation of their planned aerial demonstration at the yodeling festival in Zug that weekend. An investigation

into the incident was initiated to understand the circumstances and prevent future occurrences.



Figure 9, F-5 Patrouille Suisse, MAC (Credit: @thenewarea51)

7. 30 June, Super Decathlon (Argentina)

The tragic incident involving the Super Decathlon at the Agronea festival in Argentina suggests that the pilot lost control of the aircraft during a spin maneuver. The aircraft was observed flying over the event before it stalled and spiraled to the ground, leading to a grave situation with a reported possibility of two fatalities.



Figure 10, Super Decathlon, LOC (Source: <https://twitter.com/matiasslongoni/>)

8. 2 July, AT-27 (Apiay AB, Colombia)

During a display involving five AT-27M Tucano aircraft (Embraer EMB-312A) from the Colombian Air Force's Escuadrón de Combate 212, a tragic accident occurred over Captain Luis F. Gómez Niño Air Base (API/SKAP) in Apiay. Two of the Tucanos collided mid-air. As a result of the collision, one aircraft crashed and was completely destroyed, leading to the death of the pilots. The other involved aircraft, despite the mid-air collision, managed to

execute a safe emergency landing back at the airbase.



Figure 11, AT-7, Colombian AF, MAC (Source: canaluol)

9. 2 July, Su-30 (Paracotos, Venezuela)

An AMB Sukhoi Su-30MK2V Flanker-G+, operated by Grupo Aéreo de Caza Libertador 13, was destroyed in a crash caused by a bird strike. The incident occurred in an unpopulated area between Paracotos and Tejerias in the state of Miranda, Venezuela. Following the bird strike, which led to the mechanical failure of the engine, both pilots were forced to eject from the aircraft. Tragically, one pilot sustained fatal injuries upon landing, while the other pilot was seriously injured.

The aircraft was part of the preparations for the Air Parade scheduled for the 5th of July celebrations.



Figures 12 and 13, Su-30, Venezuelan AF, Bird Strike (Source: venezuelanews.com)

10. 16 July, Extra-300 (Kouvola, Finland)

On July 16th, an Extra 300S, registered as OH-ESS, was involved in a fatal accident during an air show at Selänpää Airfield (EFSE) in Kouvola, Finland. The aircraft crashed into the

woods at the airfield, resulting in the death of the pilot and the loss of the aircraft.



Figure 14, Extra 300, LOC (Credit: Mari Kononen, Otso Huttunen)

11. 13 August, MIG-23 (Willow Run Airport, USA)

On August 13, at the “Thunder over Michigan Airshow” at Willow Run Airport in Ypsilanti, Michigan, a Mikoyan-Gurevich MiG-23UB, N23UB, crashed near Belleville, Michigan, following a failed “banana pass” maneuver due to an engine afterburner ignition issue. Despite the pilot’s efforts to troubleshoot the problem by adjusting the aircraft’s variable geometry wings for better lift, the situation necessitated ejection as recommended by the rear seat observer. The pilot and observer ejected safely but sustained minor injuries. The aircraft crashed approximately 1 mile south of the airport’s runway 27, leading to a post-impact explosion and fire, with the wreckage spreading over a 600 ft. path near residential areas. Remarkably, there were no ground injuries reported. This incident underscores the risks associated with flying vintage military aircraft, especially during high-profile public events like airshows.



Figure 15, MIG-23, Ejection (Credit: Scott Belanger)

12. 31 August, F-5 (Radom, Poland)

At the Air show Radom 2023 in Poland, an F-5 from the Patrouille Suisse had a bird strike.

After completing a single ship inverted pass and turning off its flares, the jet encountered a flock of birds in its path, resulting in a bird strike. Fortunately, the incident did not cause any mechanical damage to the aircraft, and the cockpit glass remained undamaged, allowing for the continuation of the show without any adverse effects on the performance or safety of the pilot and aircraft.



Figure 16, F-5, Patrouille Suisse, Bird strike (Credit: Dafydd Philips)

13. 10 September, T-28 (Borgond, Hungary)

On September 10, during a display flight at the Börgönd airshow in Hungary, a tragic accident occurred involving a North American T-28A Trojan, registered as HA-RDM. The vintage aircraft was performing an aileron roll following a low pass over runway 01 when it lost altitude, crashed into the terrain, and burst into flames, leading to the aircraft’s destruction. Both the pilot and a passenger aboard the aircraft were killed in the crash. Additionally, the accident resulted in serious injuries to three spectators on the ground—a young girl, a woman, and a man—who suffered serious burns and a little boy who was slightly injured.



Figure 17, T-28, FIT (Credit: sylardcomfull)

14. 16 September, M-339 (Torino, Italy)

On September 16, an Aermacchi MB-339 jet of the Frecce Tricolori experienced a tragic accident shortly after taking off as part of a

formation bound for Vercelli to perform in an aerial exhibition. The aircraft lost altitude and crashed to the ground under circumstances that remain unclear. Fortunately, the pilot managed to eject safely before the impact. The investigation into the cause of the accident is ongoing, with a bird strike during takeoff being one of the hypotheses considered due to the event's dynamics. The crash had further repercussions, involving a car near the airfield's perimeter, leading to a post-crash fire. Tragically, a child in the car was killed, and three other occupants were injured.



Figure 18, M-339, Frecce Tricolori, Ejection (Credit: Carlotta Rocci)

15. 17 September, T-6 (Reno, USA)

The legendary Reno Race ended in a tragic way on the 17th of September, when two T-6s collided mid-air at the traffic pattern. A North American T-6G, N2897G (Race 6), and a North American AT-6B, N57418 (Race 14), were involved in the accident. The pilots of both airplanes were fatally injured.

Several witnesses reported observing both Race 14 and Race 6 collide while in the airport traffic pattern for runway 8.



Figure 19, T-6, MAC (Source: Airshowguy916)

16. 12 November, L-29 (Villa Cañas, Argentina)

On November 12, in Villa Cañas, Argentina, an Aero Vodochody L-29 Delfin jet with the registration LV-X468 crashed during an aerobatic maneuver at the Aeroclub Villa Cañas, resulting in the destruction of the aircraft and the death of the two occupants onboard. Witnesses captured video footage showing the jet conducting a low-altitude flyby over the airport before attempting what seemed to be a Victory Roll maneuver. Tragically, at the apex of the roll, the aircraft entered a dive from which recovery was impossible, leading to the fatal accident.



Figure 20, L-29, LOC (Source: La Capital)

Conclusion

The airshow industry in 2023 has faced a multifaceted challenge as it emerges from the pandemic era. The rise in accident rates to levels seen in 2019 suggests that the sector is grappling with more than just complacency; there is a significant concern over atrophy of skills not only among airshow performers but also among organizers and Flying Display Directors (FDDs), but also regulators who are facing understaffing issues in their organizations. The pandemic-induced hiatus likely contributed to a decline in the regular, rigorous training and operational acuity that these roles demand, leading to the potential degradation of the finely tuned competencies required for the high safety standards of airshows.

The increase in the Barker Airshow Accident Rate (BAAR), Airshow Fatality Rate (AFR), and Airshow Casualty Rate (ACR), accompanied by a decrease in the Airshow Excellence Rate (AER), signals an urgent call to action. It highlights the critical need for a comprehensive reevaluation and enhancement

of training programs, safety protocols, and operational planning. This approach must be holistic, encompassing the performers who execute the maneuvers in the sky, the organizers responsible for the planning and execution of the events, and the FDDs who oversee the safety and compliance of the displays.

Addressing the skill atrophy and bridging the gaps intensified by the pandemic requires a collaborative effort to share resources, knowledge, and best practices across regions. It is imperative for the airshow community to foster a culture of continuous learning, resilience, and adaptation. This will ensure that all involved parties—performers, organizers, and FDDs—are not only refreshed on existing procedures but are also equipped with the latest insights and innovations in airshow safety and management.

As the industry aims to reduce regional disparities in safety rates and strive for a global standard of excellence, the focus must extend beyond individual performance. The industry as a whole must commit to a culture where safety is paramount, and every stakeholder has a role in upholding this standard. By renewing this commitment in the wake of the pandemic, the airshow industry can work towards achieving its ultimate goal of zero accidents, fatalities, and casualties, with a BAAR consistently below 1 and an AER of 99.99% thus reinforcing the airshow community's contribution to the broader aviation industry's reputation for safety and excellence.

The conclusion of the 2023 Barker report could not be anything other than Des's own words, as stated in the conclusion section of his 2019 ultimate report:

“Based on statistical evidence, as an international airshow community, we seem rather limited in our ability to reduce airshow accidents and incidents, and we have not been able to arrest the decline effectively, which raises the question: Can we afford then to just continue and accept an average of 27 accidents/incidents per annum over the past twenty years?

We continue to lose approximately 13 display pilots per year on average and have not yet managed to consistently prevent any passenger or spectator deaths or injuries. It is pointless to

introduce additional regulations; there are already enough in place; what is required, however, is to zero-in on human factors across the entire airshow community, from first responders, through vendors, safety officers and display pilots alike, through a continuous ‘in your face’ safety programme, which includes occupational health and safety. Considering the fact that airshow accidents is a worldwide phenomenon, there is an urgent need to preach, implement and share the ‘airshow gospel’ and ‘lessons learned’ across all countries in an attempt to reduce airshow accidents.

The purpose of this report is not for shock value; it is not to preach. It is so that we all may learn. Airshow flying is hazardous, and despite all our preparations, our skills, and our training, something may still go wrong. And if something should go wrong, we only hope that others may learn from our experience, so that it won’t happen again. Based on the fickleness of human judgment in the low-level display environment, we need to understand that we are the weakest link in the safety chain.”

Prepared by:

Dr Manolis Karachalios
Chairman, EAC