EUROCONTROL SAFETY AND HUMAN PERFORMANCE

KEY PUBLICATIONS

Global Action Plan for the Prevention of Runway Excursions Published

Runway excursions – when aircraft unintentionally veer off or overrun the runway on arrival or departure – are one of the most serious risks in aviation. They comprised 23% of accidents between 2005 and the first half of 2019 according to IATA (International Air Transport Association) data.

The *Global Action Plan for the Prevention of Runway Excursions (GAPPRE) Part 1* was published in January 2021 after being signed by the European Union Aviation Safety Agency (EASA), the Civil Air Navigation Services Organisation (CANSO), Airport Council International (ACI), the International Air Transport Association (IATA), the Flight Safety Foundation (FSF) and EUROCONTROL. GAPPRE contains 101 consensus-based recommendations that define actions beyond regulatory compliance for regulators, ICAO, aircraft manufacturers, airports, ANSPs, aircraft operators and research organisations.

The plan is a product of almost two years of effort by the global aviation industry, coordinated by EUROCONTROL Network Management Directorate (NMD) through the Safety Team and the Flight Safety Foundation. GAPPRE was developed by a global team of more than 100 professionals from over 40 organisations in six working groups led by the industry (IATA, CANSO, UK Civil Aviation Authority, Gulfstream, Aeroport Charles de Gaulle and NLR Netherlands Aerospace Centre).

GAPPRE Part 2 was published in May 2021 and contains explanatory and guidance material and best practices. A combined document now contains Part 1 and Part 2 (see below).

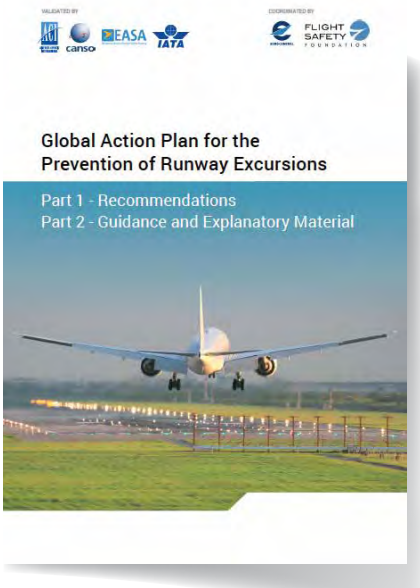
Iacopo Prissinotti, Director Network Management EUROCONTROL, said that *"GAPPRE's guidance material and best practices helps aviation organisations put in place recommendations from the GAPPRE report. As aviation prepares for the recovery of air traffic, I encourage all operational stakeholders to use these recommendations, of course taking into account local conditions and specific contexts, to reduce operational safety risks to truly 'build back better' European aviation."*

The risk of runway excursion depends on a number of factors such as runway condition maintenance and reporting, aircraft performance and operations, and collaborative approach path management, and can be mitigated by adhering to robust policies for safe descent and approach planning, stabilised approach, safe landing and go-around.

The aviation experts who identified the most important actions to reduce the risk of runway excursions were led by representatives from IATA, CANSO, UK Civil Aviation Authority, Gulfstream, Aeroport Charles de Gaulle and NLR Netherlands Aerospace Centre with overall coordination by the Flight Safety Foundation and EUROCONTROL. The experts reviewed accident and incident data, single runway excursion event scenarios and best practices, and suggestions on risk and resilience management.

Further reading

- SKYbrary (2021). *Global action plan for the prevention of runway excursions (GAPPRE).* https://skybrary.aero/index.php/Global_Action_Plan_for_the_Prevention_of_Runway_Excursions_(GAPPRE)



"GAPPRE was developed by a global team of more than 100 professionals from over 40 organisations"

Safe Start-Up: Key Analysis Released by EUROCONTROL Safety Team

The EUROCONTROL Safety Team (comprising ANSP Safety Directors and Managers, as well as EUROCONTROL specialists) and its SAFOPS group developed a safety argument and a list of potential hazards associated with the recovery of normal operations following COVID-19 aviation lockdown. These documents are intended to help ANSPs plan and execute a safe and resilient return to normal operations. The activity was part of the collaborative effort to ensure a safe, smooth and coordinated recovery of European ATM network operations from the lockdown caused by the COVID-19 pandemic.

The material was also jointly coordinated with CANSO CESAF and with EASA ATM CAG (Collaborative Analysis Group) and has been integrated and updated weekly in the Network Operations Plan (NOP). The purpose of the safety argument is to support ANSPs by providing a comprehensive reference to elements of ANSPs' functional systems that may have been affected during the COVID-19 lockdown period and need to be properly accounted for and managed when planning and executing the transition to normal operations.

Further reading

- SKYbrary (2021). Safety argument: Transition to normal ATS operations. https://www.skybrary.aero/bookshelf/books/5741.pdf
- SKYbrary (2021). SAFOPS – List of potential hazards associated to the recovery of normal operations following COVID-19 aviation lockdown. https://www.skybrary.aero/bookshelf/books/5742.pdf

Top 5: 2020 OPS Safety Priorities – European Coverage

Network-wide Top 5 Safety Priorities Identified

The Safety Team conducted a new exercise to identify the Top 5 safety priorities that have network-wide commonality for 2020 using a safety functions map (SAFMAP) analysis. The SAFMAP review uses 2019 incident data from 17 ANSPs (see figure below with the coverage of the exercise). This analysis looks not only into how and when things failed (how barriers failed to stop an event propagating further), but also at resilience, including when and how things worked (the barrier that stopped an incident from propagating further on the accident trajectory).

Further reading

- SKYbrary (2021). EUROCONTROL top 5 operational safety priorities. https://www.skybrary.aero/index.php/EUROCONTROL_TOP_5_Operational_Safety_Priorities

"The Safety Team conducted a new exercise to identify the Top 5 safety priorities that have network-wide commonality for 2020"

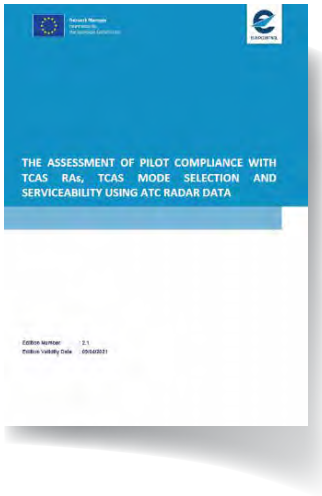
TCAS Resolution Advisory Compliance Study Updated

The Safety Team carried out a study of pilot compliance with TCAS resolution advisories (RA) (see *HindSight* 31). *The assessment of pilot compliance with TCAS RAs, TCAS mode selection and serviceability using ATC radar data* was published initially in October 2020 and updated in February 2021 to address comments. In total, 1184 RAs were examined.

In the updated analysis, an alternative and less rigid assessment method was used that gives credit to a pilot having to change vertical rate significantly (e.g., from climb to descent) even if the final required vertical rate has not yet been achieved. According to the updated method, just over half of the RAs were responded to correctly 8-12 seconds after the RAs. Compliance varied depending on RA type and duration and in the worst case the correct compliance was as low as 38%. The results are in line with the previously conducted research. However, the new method indicates significantly fewer cases where the pilots were assessed to be not responding to the RA at all, or to be responding in the opposite sense. Additionally, the compliance assessment has been conducted based on the aircraft type and operation type (no significant differences were found).

Further reading

- EUROCONTROL (2021). The assessment of pilot compliance with TCAS RAs, TCAS mode selection and serviceability using ATC radar data. Brussels. https://www.skybrary.aero/bookshelf/books/5842.pdf



TCAS Statistical Data Released

Have you ever wondered how many TCAS RAs happen each day? Or at what altitude there is the most climb RAs? Finally, we have answers to these questions and many more in the recently published report on TCAS statistical and performance data. The data has been mainly obtained from radar recordings collected in core European airspace and supplemented by snapshot of airborne statistics.

Further reading

- EUROCONTROL (2021). Traffic alert and collision avoidance system (TCAS): Selected statistical and performance data in core European airspace. Brussels. https://www.skybrary.aero/bookshelf/books/5986.pdf

The EUROCONTROL Safety Culture Programme Explained

EUROCONTROL has released a white paper on the past, present, and future of its pioneering safety culture programme. 'The past' considers the history of the programme and why it came about. 'The present' considers what ANSPs have learned through the programme, how their organisations have been changed by it, and also the EUROCONTROL perspective on how it has shaped the industry. 'The future' considers where the programme should go next, and what will be required to achieve this. Although the principal focus is on ATM, since that represents the evidence base for this White Paper, there is growing interest and application of safety culture approaches in other aviation sectors including airlines, airports and airframe manufacturers.

Further reading

- EUROCONTROL (2021). The future of safety culture in European air traffic management [White paper]. Brussels. https://www.skybrary.aero/bookshelf/books/5993.pdf

"There is growing interest and application of safety culture approaches in other aviation sectors including airlines, airports and airframe manufacturers"

Patterns in How People Think and Work

Patterns can be found everywhere throughout aviation, including information about traffic, load, approaches, and operations. In January 2021, the EUROCONTROL SAF Unit published a white paper in the context of the 'weak signals' project in partnership with DFS and academia. This white paper provides the basis for an inventory of patterns and lay the foundation for pattern identification in ATM.

First, the paper illustrates:

- what a pattern is
- how people think in patterns, especially about disruptions and recovery
- how visual patterns aid thinking, and
- how engineering has used visual patterns to bridge the gap between general principles and highly variable specific situations.

Second, the paper explains the pattern approach and its role in connecting research and practice in human-computer interfaces, and in the design of human-machine and human-automation joint cognitive systems. It explains how pattern finding is important in proactive human and organisational aspects of operations.

Third, the paper illustrates three use case topics where pattern finding provides information about emerging risks and vulnerabilities that go beyond specific incidents in specific contexts.

Further reading

- EUROCONTROL (2021). Patterns in how people think and work [White paper]. Brussels. https://www.skybrary.aero/bookshelf/books/5987.pdf