APPENDIX 7
ADVANCED STATISTICS FOR AERODROMES AND GROUNDHANDLING

Appendix 7
Advanced statistics for aerodromes and groundhandling

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This appendix covers the advanced statistics for aerodrome and groundhandling operations in the EASA Member States.

The first section outlines the safety risks, that have been derived from the European Central Repository (ECR). They provide per domain, and per type of operation as necessary, the relative safety risk level and frequency of each key risk area (KRA). The KRA is the most likely type of accident that would have resulted if an occurrence had escalated into an accident. It is one element of the European Risk Classification Scheme (ERCS). In terms of safety performance, they are the Tier 2 safety performance indicators for the domain. The KRAs are prioritised based on their aggregated risk contribution using the ERCS, as applied by the competent authorities from 2023 onwards in accordance with the Commission Implementing Regulation (EU) 2021/2082 published in November 2021. The timespan of the 2024 edition is, therefore, limited to one year (i.e., 2023, the first year of ERCS implementation), and will be expanded on a yearly basis until a five-year timespan is achieved. The frequency of occurrences and the related aggregated ERCS numerical equivalent scores are determined per KRA, considering accidents, serious incidents, and incidents, where the KRA and the ERCS safety risk score have been completed by the competent authority. An ERCS completion rate per domain and operation type as necessary, complements therefore the presented data for the contextualisation.

The other section provides an overview of the Human Factors (HF) and Human Performance (HP) issues. The term HF describes human characteristics, abilities and limitations. The knowledge of HF is used throughout the aviation industry to design systems, equipment and work in ways that support humans in performing at their best. HP refers to how people perform their tasks. Following safety occurrences, HF and HP knowledge can also be used diagnostically to better understand what went wrong, what went right and, more importantly, to understand how to prevent such occurrences from happening again. The same European Co-ordination Centre for Accident and Incident Reporting Systems (ECCAIRS) taxonomy that helps us to identify our safety issues and KRAs also provides us with HF and HP codes. This taxonomy groups event types at different levels, so that all the issues relating to personnel are grouped at the highest level into ‘personnel’. The personnel issues are then further subdivided into four categories: experience and knowledge events, physiological events, situational awareness and sensory events, and personnel task performance events. A further two levels of subdivision exist, providing increasing granularity on the type of HF or HP issues identified. The presented data consider all occurrences of a domain, i.e., accidents, serious incidents, and incidents.

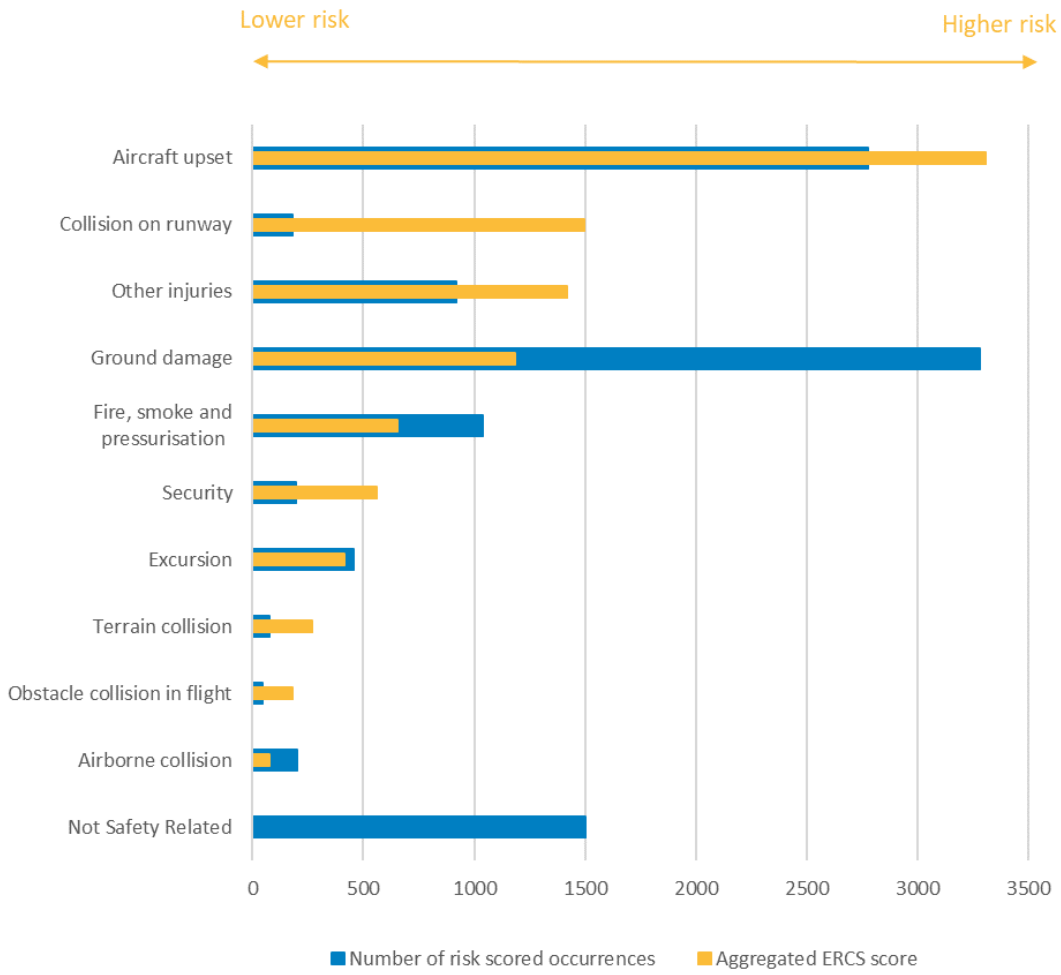
1 Safety risks

The safety risks for aerodrome and groundhandling operations identified by EASA are derived from occurrences data recorded in the ECR, covering the one-year period 2023. From the 58 870 occurrences in 2023, only 10,590 occurrences were completed with the KRA and ERCS safety risk score representing a completion rate of 18% for the domain. This being the case the information hereafter is solely based on this restricted dataset.

The KRAs for aerodrome and groundhandling operations are shown in **Appendix 7 Figure 1**. KRAs and occurrence categories (refer to core document Figure 7.3) have different purposes. While occurrence categories describe actual factors and outcomes of an occurrence, KRAs describe the potential outcome of an occurrence. The KRA is defined by the most likely type of accident that an occurrence could have escalated to. Unlike occurrence categories, where multiple categories may be assigned to a single occurrence, there can only be one KRA per occurrence. The KRA is one element of the ERCS. This scheme is applied when determining the safety risk score of an occurrence and is further detailed in the ASR introduction.

In the one-year period 2023, ground damage was the most likely type of accident (fourth blue bar from the top) to which occurrences escalated or could have escalated (with 3 278 occurrences). However, in terms of risk, it was Aircraft upset that represented the highest cumulative safety risk (first yellow bar from the top) in the domain. It can be noted that Collision on the runway is the second highest cumulative safety risk despite only 180 occurrences that escalated/could have escalated to such an outcome. Finally, the third highest safety risk in the Aerodrome and Groundhandling domain is Other Injuries, where only 920 occurrences (fifth in the ranking of number of occurrences) resulted in the third rank in terms of aggregated ERCS risk score[1].

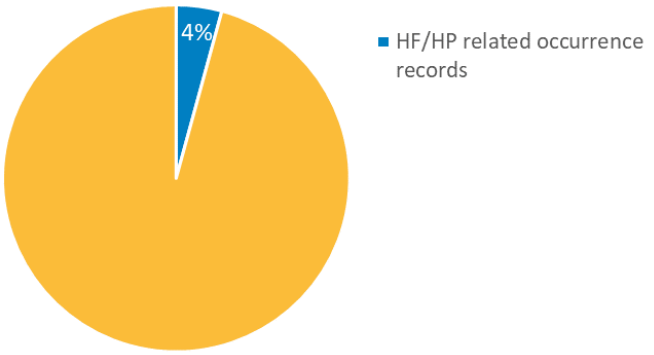
[1] Please note, that the value 'not safety related' as a KRA attribute is no longer foreseen. However, its use can still be seen in combination with the ERCS score A0 'no implication to safety'. In figure 7 a significant number of such occurrences are being coded in this way and shared with the ECR.



Appendix 7 Figure 1 KRAs by aggregated ERCS score and number of risk-scored occurrences involving aerodromes and groundhandling

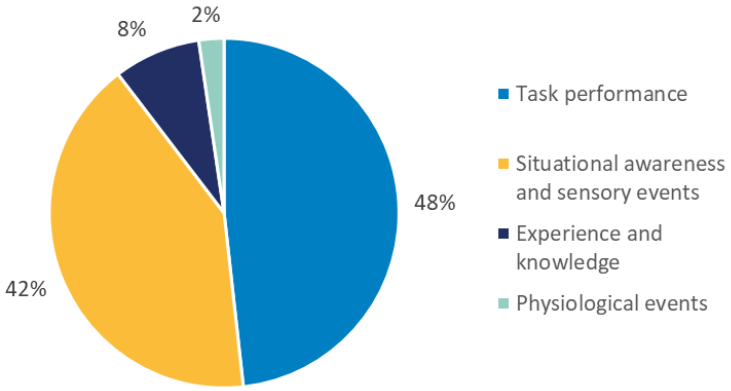
2 Human factors and human performance (HF/HP)

There were 213 698 occurrence records involving aerodromes and groundhandling over the period 2019-2023. From this dataset extracted from the ECR on April, 15 2023, 9 073 occurrence records in the aerodromes and groundhandling domain identified HF/ HP as a contributing factor, including 47 accidents and 55 serious incidents. These occurrences are labelled as personnel events in the ECCAIRS taxonomy. **Appendix 7 Figure 2** presents the percentage of HF/HP related occurrence records relative to the total number of occurrence records from 2019 to 2023.



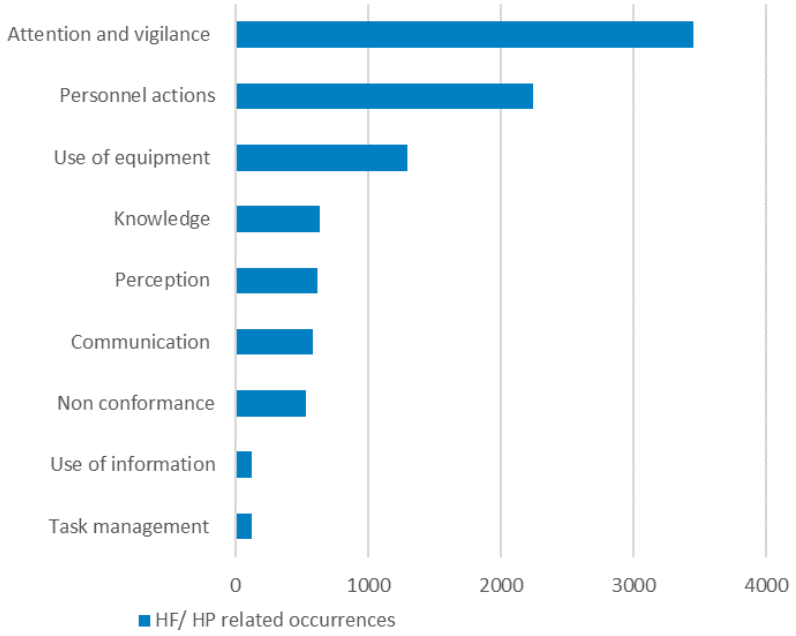
Appendix 7 Figure 2 HF/HP occurrences involving aerodromes and groundhandling

The application of the first level of HF/HP codes can be seen in **Appendix 7 Figure 3**. Out of the 9 073 HF/HP related occurrence records, 4 718 were coded under task performance events, 4 046 under situational awareness events, 788 under experience and knowledge events and 227 under psychological events. Note that one occurrence may indicate more than one HF/HP event. These may be more easily discernible in an investigation than the factors that cause them, e.g., complexity of the environment, technological malfunctions, inadequate information or training, high workload, stress, or fatigue, etc.



Appendix 7 Figure 3 High-level HF/HP event codes applied to occurrences involving aerodromes and groundhandling

Appendix 7 Figure 4 compares the number of occurrences using detailed HF/HP event codes. Data shows that issues related to attention and vigilance that have been reported in 3 450 records are the most prevalent, indicating it as an area with the most HF/HP related safety concerns for aerodrome and groundhandling operations.



Appendix 7 Figure 4 Detailed HF/HP event codes by number of occurrences involving aerodromes and groundhandling