European Network of Civil Aviation Safety Investigation Authorities

ANNUAL REPORT 2021

Version: 4.0, **Date:** 04 March 2020

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FOREWORD

BY THE CHAIRMAN OF THE EUROPEAN NETWORK OF CIVIL AVIATION SAFETY INVESTIGATION AUTHORITIES

ENCASIA was formed in January 2011. The Network now has reached its eleventh year of functioning. This annual report as well as the ten preceding ones illustrate ENCASIA's achievements along the years and remaining challenges.

During the year 2021, the COVID-19 pandemic remained a main challenge for the aviation industry and continued to have an impact on safety investigation authorities with regard to the workload, as well as with regard to procedures to follow.

The pandemic also affected ENCASIA and its members with regard to the holding of meetings, since virtual meetings, both for the Working Group Meetings, as well as for both Plenary Meetings held in 2021, had to be held virtual. Although there was a good turnout, it may be said that members prefer to have the interaction of the physical meetings, in order to foster discussions.

However, ENCASIA and Working Group 6 were indeed fortunate to have had the opportunity and possibility to hold the Workshop on Safety Recommendations in Toulouse in October 2021, which will be referred to in detail under the work carried out by Working Group 6 and Working Group 4. In my opinion, this Workshop resulted in positive results not only for ENCASIA, but also for the participants, wherein the Workshop reaped great benefits, more so that it was held in presence.

This year, ENCASIA was also invited to participate in the ICAO Regional Accident and Incident Investigation Organization (RAIO) Investigation Cooperation Mechanism (ICM) Cooperative Platform (CP), wherein ENCASIA promoted the procedures and legal framework within which it operates.

As Chairperson of ENCASIA, I attended a Symposium in Spain regarding Family Assistance.

ENCASIA also issued a letter to the Director of the Air Navigation Bureau at ICAO, expressing the concern regarding the situation of staffing relating to AIG. By means of this letter, ENCASIA requested the addition of experienced personnel for the AIG Section.

This annual report also contains a list of fatal accidents that occurred in 2021 to commercial aviation worldwide, wherein 2021, although seeing a slight increase in

fatal accidents when compared with 2020, saw a significant decrease in deaths when compared to the previous two years.

It is also noteworthy to mention that 2021 was also a significant year for the return to service of Boeing 737 MAX, after having been grounded for about 2 years.

I would like to thank the Heads of the Working Groups, the members in each Working Group, the European Commission, the SIA-Secretary, as well as the Deputy Chair of ENCASIA for their work and contribution throughout the year.

I hope that you will enjoy reading this report and learn more about ENCASIA's contributions and advancements.

Rémi Jouty

Chairman of ENCASIA

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INTRODUCTION

The European Network of Civil Aviation Safety Investigation Authorities (ENCASIA) was established in January 2011 thanks to the entry into force of Regulation (EU) No 996/2010 on the investigation and prevention of accidents and incidents in civil aviation.

ENCASIA constitutes an independent grouping of the 27 civil aviation safety investigation authorities (SIAs) of the EU Member States.

ENCASIA is composed of the Heads of the SIAs in each of the Member States and/or, in the case of a multi-modal authority, the Head of its Aviation Branch, or their representatives, including a Chairman and a Vice-Chairman chosen among these for a period of three years.

ENCASIA puts a strong emphasis on the coordination and mutual support between Safety Investigation Authorities (SIAs), in order to generate real added value in aviation safety.

This is to be achieved by building upon the already existing cooperation between such authorities and the investigation resources available in the Member States. SIAs should be able, in each Member State, to conduct efficient and independent investigations and contribute to the prevention of accidents through their activities.

ENCASIA's mission is to further improve the quality of air safety investigations and to strengthen the independence of the national investigating authorities. Therefore, it may engage in activities such as:

- Development of training activities;
- Promoting safety investigation best practices;
- Developing a mechanism for sharing investigating resources;
- Advising EU institutions on air accident investigation and prevention matters.

This report is the eleventh ENCASIA Annual Report related to the implementation of its work programme. The Report will be provided to the European Parliament and European Council, and will be made publicly available on the ENCASIA webpages, which is hosted on the European Commission's website at www.encasia.eu.

Chapter 1:
SIGNIFICANT ORGANISATIONAL AND REGULATORY CHANGES IN 2021

1.1) ENCASIA's Organisation

1.1.1) ENCASIA's Chairman and Deputy Chairman

Mr. Rémi Jouty (France) and Mr. Jurgen Whyte (Ireland), who were respectively re-elected Chairman and Deputy Chairman of ENCASIA in 2020, continued in office.

1.1.2) ENCASIA Secretariat

Dr Rebekah Tanti Dougall (Malta) assumed the role of ENCASIA SIA-secretary in February 2021, after Mr. Olivier Ferrante (France) was acting SIA-secretary since November 2020. The secretariat is further supported by the European Commission through the participation of Mrs Isabel-Clara Barbero.

1.1.3) ENCASIA Members and observers

Following a formal request, the SIA from Ukraine have asked ENCASIA on the possibility of seeking observer status. This request is in the process of being reviewed through the Peer Review in conjunction with the Sub-Committee on Observer Candidate States.

1.1.4) ENCASIA Grant

2021 earmarked a new grant from the European Commission, commencing from the beginning of 2021, until the end of 2022.

1.2) Investigations in COVID times

ENCASIA members provided feedback on the continued impact of the COVID crisis through the ECAC ACC forum and during the ENCASIA Plenary Meetings held in March and in September 2021.

Despite an overall decrease in aviation activity, several SIAs reported high numbers of General Aviation accidents for the year 2021. During these times, SIAs had the opportunity to continue working on their respective backlogs of final reports.

During the Plenary Meetings, there were also noteworthy topics of discussion, such as crewmembers asking the Accident Investigation Authority to issue an absence of aviation accident or incident declaration, wherein such statement would be presented in a hiring selection process; the safety investigation of Civil Spaceflights; electric powered aircraft accidents as well as parachute operations.

1.3) Guest Speaker during the Plenary Meeting

During the Plenary Meeting held in March 2021, ENCASIA had the pleasure of welcoming Mr Ludovic Aron, Head of Large Aircraft Department to deliver a presentation on the EASA conditions for return to service of Boeing 737 MAX, explaining the EASA conditions for return to service as well as the way forward and the necessary action to improve policies on lessons learnt.

Airworthiness and safety directives related to this return to service were issued on 28th January 2021.

Chapter 2: ENCASIA PARTICIPATION IN INTERNATIONAL FORA

2.1) ICAO Regional Accident and Incident Investigation Organization (RAIO) Investigation Cooperation Mechanism (ICM) Cooperative Platform (CP)

ENCASIA was invited to participate in the ICAO Regional Accident and Incident Investigation Organization Investigation Cooperation Mechanism Cooperative Platform (RAIO ICM CP) which was set up further to Assembly Resolution A40-6, which directed the ICAO Council to support the implementation and further development of the Global Aviation Safety Oversight System (GASOS) regarding the necessary measures to strengthen, assess and support RSOOs or RAIOs to assist their Member States in accomplishing certain safety oversight, accident and incident investigation and safety management functions and activities. The RAIO/ICM CP intends to build up on the successful experience coming from the set-up of the Regional Safety Oversight Organizations (RSOO) CP.

The main objective of the ICAO RAIO/ICM CP is to help strengthen existing RAIOs or Investigation Cooperative Mechanisms (ICMs) and assist in the establishment of any new RAIO or ICM to be more effective and efficient in supporting their Member States.

The Chairman of Working Group 3, Mr Martin Puggaard, and the SIA Secretary were appointed as focal points for ENCASIA.

During various RAIO/ICM CP meetings, ENCASIA presented the concept of ENCASIA and clarified points on the differences between ENCASIA and a RAIO.

There were 3 meetings on establishing the RAIO/ICM CP terms of reference, work programme, and action list, as well as the Annual Meeting.

As part of the work carried out through the RAIO/ICM CP, 2 surveys had been circulated. The first survey related to capabilities baselines of RAIO's and ICM's, including questions on legislation and or agreement supporting the creation thereof and whether the RAIO is capable of supporting the member states with technical support. However, ENCASIA had underlined that when comparing ENCASIA with a RAIO, it was evident that ENCASIA is a different mechanism, since in a RAIO, member states transfer the obligation and responsibility of investigating to a RAIO, however, ENCASIA does not take over responsibility, but supports cooperation between the members for best practices and in the future would organise mutual support if possible.

The second survey related to the challenges as a RAIO, as well as the needs and opportunities that can be achieved through the RAIO/ICM CP.

Through this platform, ENCASIA would be in a better position to explain ENCASIA's role and activities and to learn from others.

2.2) ICAO / Spain Symposium on Assistance to Aircraft Accident Victims and their Families

A State Letter was issued on the 9th July 2021 inviting States to attend the Symposium on Assistance to Aircraft Accident Victims and their Families.

This event was hosted by the Government of Spain to provide the overall picture of the regulatory framework related to the topic, as provided by Annex 9 and Annex 13.

The State Letter also referred to the 38th Session of the Assembly and recalled Resolution A38-1 wherein it was recognized the need to provide assistance to victims and their families and urged States 'to establish legislation, regulations and/or policies to support victims of civil aviation accidents and their family members'. This was re-affirmed through Resolution A39-27.

The Chairman of ENCASIA was invited as the ENCASIA Chair by Spain to be a speaker at the Symposium in Spain from the 1st to 3rd December 2021.

Annex 13 refers mainly to providing information to victims, whilst Regulation (EU) No 996/2010 also outlines a clear obligation to inform victims before making information public.

Further to ENCASIA members having agreed during the Plenary Meeting, during the Symposium, the Chairman outlined the ENCASIA position, that whilst, on the one hand, ENCASIA does not support or promote extending or giving a more active role to families during the investigation process, and in particular during the consultation of draft final report, on the other hand, however, it does not mean that ENCASIA would prevent individual Member States from going beyond this, like in case of the family of the pilot. It was also highlighted that Regulation (EU) No 996/2010 had introduced an obligation for the SIA to inform victims and their families, before making information public. European actions, by ECAC/ACC and by ENCASIA, to promote good practices regarding information of families of victims, were presented.

A High Level COVID Conference Working Paper prepared by Canada on Conflict of Interest in the situation of aircraft downings, subsequent to the downing of the Ukrainian aircraft near Tehran in January 2020, also raised the topic of participation of families, or of States with many fatalities, in a safety investigation. A Working Paper

was drafted, however, after several States had expressed reservations due to the initial draft possibly being over-interpreted as proposing the review of Annex 13 for all kinds of major investigations, and in particular possibly being interpreted as introducing the active participation of the state of victims for all types of investigations, this resulted in a second version of the working paper, with a number of States co-sponsoring it, including the European Union.

2.3) ICAO-IAC Aircraft Accident Investigation and Incident Investigation (AIG) Online Workshop

The Deputy Chairman was invited to deliver a presentation on ENCASIA during the ICAO-IAC[1] Aircraft Accident Investigation and Incident Investigation (AIG) Online Workshop, which took place between the 12th and 14th April 2021.

His presentation including background information relative to the formation of ENCASIA through Regulation (EU) No 996/2010, the aims and objectives of ENCASIA, an overview of the Work Programme, including the EMSS, the Peer Review Process and the Safety Recommendations database (SRIS), as well as future activities planned.

The Objectives of the workshop were to develop competencies to enable States to conduct independent and effective investigations of aircraft accidents and incidents; to support the implementation of ADREP/ECCAIRS compatible taxonomies and databases; to support States in better fulfilling their obligations within the context of ICAO Annex 13 as well as to Share Information and experience in aircraft accident and incident investigation (AIG).

The Workshop provided an update regarding AIG, IAC and RAIO. It also focused on capacity building related to organization, staffing and training, as well as notification of accidents and serious incidents. It also dealt with forwarding of ADREP reports, ECCAIRS user information, review of accident or serious incident final reports of interest, review of Safety recommendations of interest, including SRGC[2], as well as safety lessons from 2020 General Aviation accidents presented by BEA, France.

The workshop was held in English and Russian languages. A total of 130 participants from 32 States, 3 international organizations and industry attended the workshop.

[1] ICAO EUR/NAT Regional Office together with Interstate Aviation Committee (IAC)

2 Safety Recommendations of Global Concern

2.4) Workshop on accident/incident investigations – EASA Eastern Partnership / Central Asia Project (EaP/CA)

EASA, through its Eastern Partnership / Central Asia Project (EaP/CA), organized an online workshop with Ukrainian authorities on the 11th May 2021 on Accident and Incident Investigations.

The aim of the EASA Eastern Partnership / Central Asia Project is to support the sustainable development of civil aviation in line with international and EU standards, having as its objectives, for countries which are part of the EU's Eastern Partnership (EaP), such as Ukraine, to ensure their effective participation in the pan-European civil aviation system; as well as, for Central Asian countries, to support their civil aviation authorities in fulfilling their international obligations in terms of air safety and security.

The Chairman of ENCASIA delivered a presentation on the 'ENCASIA experience with regards to independence of safety investigation authorities and interactions with other organisations'. In this presentation, he provided a background on Regulation (EU) No 996/2010 and the setting up of ENCASIA, the Peer Review, as well as ENCASIA's interactions with other organisations.

Chapter 3:
ECCAIRS 2.0 AND SRIS 2.0

Article 18 of Regulation (EU) No 996/2010 requires member states to record in the European Common Repository (ECR) all safety recommendations issued in accordance with Article 17(1) and (2). A decision was made by the European Commission in 2017 that support of the ECR would be transferred from the DG-JRC (Joint Research Centre) to EASA on 1st January 2021.

The new ECR supporting software, ECCAIRS 2, which is referred to as E2, is based on modern IT technologies and allows a more efficient central ("Web based") architecture combining "national" and "ECR" data. It will be used to manage the European Reportable Events database required by Regulation (EU) No 376/2014, as well as the European Safety Recommendation database (SRIS), required by Regulation (EU) No 996/2010.

The E2 project started back in October 2017. Administrative issues prevented EASA from proceeding with the project until the third quarter of 2019, when a Framework Contract (FWC) with an IT service provider was finalized and product development started.

The target was to reach a Minimum Viable Product (MVP = all the core functionalities ensuring E2 runs similarly to the legacy ECCAIRS) by June 2020 for E2-ADREP (related to the ICAO ADREP taxonomy used by the occurrence reporting system) and by September 2020 for E2-SRIS.

The redesign of ECCAIRS would have brought new features and technical enhancements to the overall performance of the system and to the user experience.

The following new features were envisioned for SRIS2:

- New web based architecture, including the possibility for an SIA to set up custom settings, custom fields, personal notes, roles and user management without requiring the installation of any components on a local server.
- Versioning of the records, allowing an SIA to publish the version of a Safety Recommendation while still being able to work on intermediary draft versions, not visible to others.
- Full control on when to 'release' safety recommendations to the ECR-SRIS and to the Public SRIS (including responses).
- Feature which could allow an SIA to electronically address a safety recommendation to an E2 registered organization (EASA MS NAA's).
- Possibility to export data to external analytical tools (Excel, 'Tableau', etc.).

- Powerful search and query function of occurrence reports directly integrated into the SIA's local environment and possibility to link these occurrences to a safety recommendation.
- Other features currently under development in coordination with ENCASIA WG6.

ENCASIA WG 6 has been actively involved in the project with the participation of its members to the ECCAIRS Steering Board, Steering Committee, EASA Network of Analysts (NoA) and KUG[3] in order to assist in a smooth transition to the new system.

Unfortunately, the pandemic emergency of the COVID-19 had a negative impact on the project timeline. Furthermore, some technical issues and bugs resolution caused further delays to the completion of the project. Nevertheless, no revised deadline on the termination of the legacy system was possible.

Despite the great effort that the EASA E2 team put into the development of this project, approaching the end of year 2020, serious concerns had arisen on the risk of a discontinuity in the Safety Recommendation management, as per Regulation (EU) No 996/2010.

In close coordination with the E2 team in order to reach sufficient maturity and knowledge of the new system as soon as possible and to minimize the undesirable outcome of a possible disruption of the SRIS functionalities, the SRIS2 was released as operational on 1st January 2021, after a short and intense period of testing and training.

In particular:

- quality checks were carried out in order to evaluate not only the quantity of data (number of SRs) but also the quality of data transferred (responses, notes, attachments, etc.).
- training of SIAs' personnel was delivered in order to operate the system and to be able to load new recommendations or update existing data.
- continuous monitoring of the system development was finalized to further improve SRIS capabilities.

Throughout the year 2021 the SRIS2 became more and more reliable achieving sufficient stability on most functionalities as shown below. Furthermore, on line training sessions were delivered to SIAs personnel.

[3] KUG: Key User Group. This team was set up with representatives of NAAs to establish the functional specifications (business requirements) of the system. ENCASIA was represented by WG6 and assisted in defining the key requirements for the recording of safety recommendations and for the management of SIA's events databases to ensure that the current and future anticipated needs will be met.

- December 2020:
  First Release of SRIS 2 Web Application
  Basic Features available but system not very stable
  User/Role management
  View Management
  Query Management
  SR Workflow
  E2 Central Hub with SRIS dedicated content
  National Admin Settings

- January 2021:
  Stabilisation of SRIS 2
  Migration of SRIS Legacy Data Base to SRIS 2
  Training sessions to SIA's
  February 2021:
  Go-Live of SRIS 2 and SRIS 2 Public Portal with all data migrated

- May 2021:
  Delivery of Indexation Optimization package, resulting in substantial improvements on overall performance and stability of the system.
  SRIS 2 Web APP:
  New Filters available in the Web APP, aligned with SR Workflow (Draft/In Progress/Shared/Published)
  Accessibility to the ADREP ECR to all SIA's.

- June 2021:
  User Experience Improvements
  Edit Button from the SR form
  Show ALL topics rather than adding one by one
  Review of Authority Filters
  User Preferences retained between different sessions

- As of July: entering in a new phase of development after stabilization of the system, more classic approach with regards to feature prioritization definitions in collaboration with WG6 and definition of a roadmap. Also Operational Stream with dedicated support team was set up and incident escalation channel (JIRA System) established with Service Level Agreements

- September 2021:
  Export to Excel and CSV
  Export to Word Template
  Improvements on the Query Builder
  Drag & Drop of rules, Additional Operators, Copy/paste of rules

- November 2021:
  Additional User Preferences retained between sessions
  Displayed Columns and ordering
  Sorting and Filtering of SR

- December 2021:
  First version of Notifications (be notified of any changes on selected SR or Occurrences)
  First version of Reference Databases to automate filling of information in the forms.

Nevertheless, the delays in the program and the reluctance shown toward the "ADREP" side of the E2 by most of the NAAs influenced negatively the thrust of ENCASIA SIAs in the SRIS2. For this reason it has been noted a sensible reduction of Safety recommendations inserted in the database until the last quarter 2021.

Currently, the system allows full processing of Safety Recommendation, their sharing to other specific SIA's and/or to the ECR and their publishing on the SRIS Public Portal. It also provides a "national level" that allows each SIA to work on draft versions before releasing the Safety Recommendation.

Recently the capability to export into word template, excel and csv, has become available thus enhancing the possibility to analyze aggregated data from statistic, as illustrated in the following chapters of this report.

Future features will include the possibility to receive notification via email, create custom fields for SIAs, develop a dynamic linking of Safety recommendations to occurrence reports and insert Safety Recommendations received from third countries.

Chapter 4:
ENCASIA'S WORKING GROUPS

4.1) Working Group 1: Communication

WG1 deals with Internet presence and ensures that the content of the ENCASIA webpages are regularly reviewed by SIAs in order to have at least their respective webpage updated.

The group has also explored possible improvements to share documents on a restricted web-based platform to overcome recurrent issues with the Drupal system that has become unreliable because of changes in the EC internal IT system that may affect its reliability.

The working group also took to LinkedIn to inform members of the Workshop on Safety Recommendations which was held in Toulouse.

4.2) Working Group 2: Cooperation

In 2021, the Working Group started working on best practices regarding cooperation with EASA, and documenting best practices regarding interactions with EASA, in line with the conclusions of the special working group on relations between EASA and SIAs.

The group concentrated activities on 5 tasks, including promotion of a process for using a suitable 'data sharing platform', notification issues, different aspects of information sharing between EASA and SIA. There were also progress and fruitful discussions to better understand the issues regarding an opportunity to have a second EASA adviser in an investigation. Progress was made as well regarding best practices how to deal with comments from EASA to the draft final report received by a EU member state SIA leading investigation or participating in a third country's investigation.

4.3) Working Group 3: ENCASIA Mutual Support System

WG3 aims to develop the ENCASIA Mutual Support System (EMSS) through the resource map which is envisaged in 3 phases, the project phase being from 2020 – 2030.

In 2021, the group focused on Phase 1, regarding how to introduce a system to maintain information on key SIA capabilities and abilities and key investigator competencies. Phase 2 would then establish an accreditation system for IIC and group leaders.

This would introduce an operational mutual system wherein support can be provided between ENCASIA SIAs members and would constitute ENCASIA's framework for sharing resources. This would seek to improve the quality and standards of investigations conducted by ENCASIA SIAs.

The group also developed a White Paper on the ENCASIA Resource Map, which inter alia, provides definitions of a key SIA capability and a key investigator competency:

A key SIA capability is an in-house capability that not all SIAs possess and could include: ability to download recorded data from damaged and undamaged electronic devices, including FDR and CVRs; advanced image analysis; metallurgy laboratory; search for underwater location beacons.

A key investigator competency is a competency that does not necessarily include IIC or group leader but comes in addition to the ability to investigate accidents and incidents. A key competency could include: professional qualifications and experience in organisational and human factors, structures and material failure analysis, certification, systems design and safety assessment, aerodynamics and flight dynamics, flight performance, etc.; it could also include pilots who hold an ATPL and are currently flying commercial aircraft and helicopters e.g. Boeing 737, Airbus A340, etc.

4.4) Working Group 4: Planning and Resources

Working Group 4 has the responsibility to manage the execution of the grants provided by the European Commission that support a number of items of the ENCASIA work programme. In particular, it has worked on the preparation of workshops: one workshop on safety recommendations addressed to aircraft manufacturers and another EMSS workshop on the relationship with the judicial authorities.

WG 4 supported WG 6 with regard to the logistical support in the preparation and conduct of the activities that were held in Toulouse in October 2021. It involved a call for tender and two contracts, one with the Pullman hotel near Toulouse-Blagnac airport and one with the travel agent.

The group has also drafted a call for tender dealing with a future framework contract that would encompass more activities like the support of teams of peer-reviewers to go on-site to review SIAs.

4.5) Working Group 5: Peer Reviews

In 2021, Mr Nelson Oliveira (Portugal) replaced Mr Johann Reuss (Germany) as Chairman of WG5.

The group worked on the questionnaire for Phase 2A as well as worked on developing the concept for Phase 2B.

The draft Phase 2A questionnaire was distributed to SIAs in an online version, with the focus being on the "quantitative" information about SIA's activity and internal operational capability. This aimed several objectives, as identified in the workshop held at Warsaw in 2019:

- update data collected from the Peer-reviews undertaken on Phase 1 and remove some inconsistencies in the data collected
- understand evolution in SIAs after that action to
- achieve a general overview through a statistical analysis in order to identify trends among SIAs and to better direct the support that ENCASIA may give to its members, such as training.

The group is in the process of analysing the data and producing a report.

The Peer Review Phase 2B has the intention of going into more detail on the qualitative aspects and would therefore focus on the objective of how a SIA handles a major accident investigation in a timely manner in compliance with Regulation (EU) No 996/2010.

The Working Group identified various qualitative topics, including:

a) Getting access and managing technical competencies and investigation means;

b) Relation with EASA in a major investigation;

c) Communication to public (timely release of information);

d) Communication to families;

e) Relations with Justice/sharing information with judicial authorities.

The Peer Review Phase 2B has been envisaged to be a compilation of a ''package" focusing on a mandatory part (general to all SIAs), an individual part (specific to the SIA), and an optional part (on the request of the SIA), after consultation with the SIA.

The group called for two SIAs to volunteer to participate on the pilot for Peer Review Phase 2B in 2022, in view of testing and adjusting the development of the process, with the intention of starting the phase 2B Peer-reviews from 2023.

The group also started working on a questionnaire with the intention to set up a library of questions to address how to handle a major accident, based on legislation and best practice, with the fundamental topics serving as the mandatory part.

In parallel, on the request of ENCASIA's Sub-Committee on Observer Candidate States, WG5 initiated the actions provided for in the "Guidance criteria for the assessment of candidate states seeking Observer status" in order to perform a Peer Review to the Republic of Ukraine, which has applied for such status. The process from WG5 started on October with sending the questionnaire. When the completed questionnaire is received, a Peer-review team of WG members will be setup.

4.6) Working Group 6: Safety Recommendations

4.6.1) Overview

In 2021, WG6 continued to support the European Commission and EASA with the development and testing of the new European Safety Recommendation Information System (SRIS). The members of WG6 are, in fact, representing ENCASIA in the ECCAIRS Steering Board, ECCAIRS Steering Committee, EASA Network of Analysts (NoA) and E2 KUG. Beside these specific meetings, all topics related to the SRIS2 were thoroughly discussed during the frequent teleconferences promoted by the group in conjunction with the E2 project managers.

Furthermore, WG6 focus has been oriented toward following areas:

4.6.2) Training workshop 2021

After the very positive feedback received by the participants to the training workshop on safety recommendations held in 2019, WG6 organized a similar event on 19 and 20 October 2021 in Toulouse (France).

The aim of this workshop was to improve the effectiveness of Safety Recommendations by enhancing a synergic dialogue between Safety Investigation Authorities and addressees in order to facilitate the process of responses and actions. This time the workshop was focused on manufacturers and design organizations.

Despite the difficulties encountered by the limitations imposed by the SARS Covid-19 pandemic emergency, the seminar was carried out in-presence. Considering the particular health context and for more effective interactions among participants, the event was limited to a maximum of 60 participants, roughly half coming from ENCASIA Member and Observer States Safety Investigation Authorities and the other half from the European civil aircraft manufacture and design industry.

Regarding COVID, to access the workshop, the participants had to present either a COVID vaccination certificate or proof of a negative RT-PCR, antigenic or self-test (under professional supervision) less than 72 hours old or RT-PCR or antigenic test result showing recovery of Covid-19, at least 11 days old and less than 6 months old, as per French regulation in place at the time of the event.

The workshop activities, opened by the Chairman of ENCASIA, Rémi Jouty, included several lectures and two virtual presentations from the Danish Safety Investigation Authority and the NTSB. EASA also participated to the workshop.

A very positive table discussion was fostered throughout the whole seminar, highlighting the following key points:

- The communication channel has to remain open, between the Safety Investigation Authorities and the addressees during all the life time of a Safety Recommendation. Dialogue is a key point. Although Article 18 of Regulation (EU) No 996/2010 only requires one response within 90 days, the dialogue should nevertheless continue.
- Proper addressee identification could be facilitated by early consultation with the stakeholders (the Technical Advisors). This would significantly reduce the time required for the addressee to respond to safety recommendations. The discussions highlighted that responding within 90 days is sometimes not providing enough time for the addressee. An early consultation could reduce response time and provide a more detailed response within the 90 days.
- Industry highlighted their difficulty to accept a situation were there response to a recommendation would be assessed as "inadequate" by the SIA. It has

been concluded that although Safety Investigation Authorities and addressees should do their best to converge on positions, disagreement is still possible. In that argumentation, for example, the response assessment might be considered "adequate" although in disagreement, in case the addressee provide sufficient technical justification of their position.

- Public nature of responses requires good coordination (and eventually legal review). Some manufacturers expressed the constraint of having a legal review of their responses.
- Different SIA's have different processes and, in some cases, the Investigator In Charge in contact with the manufacturers not always controls the full content of the safety recommendations. In fact, while initially there is a consultation process between Investigator In Charge and ACCREP on the Safety Investigation Authority side, and technical advisor on the manufacturer side, once the SR is drafted, this consultation goes to a board / Head of Safety Investigation Authority on one side and high management on the manufacturers side, so these new actors could modify the text and scope of the Safety Recommendation or of the response.
- High interest in SRIS database was shown by all participants. In particular, a number of manufacturers requested the possibility to extract Safety Recommendations from the public SRIS2 for safety related studies.
- It has been agreed by both Safety investigation authorities and manufacturers the importance of reporting the safety actions taken during an investigation. This underlines the need of capturing them in a more structured and harmonized way in order to further promote their dissemination.

4.6.3) Safety Recommendations received from third countries

Article 18 of Regulation (EU) No 996/2010, at point 5, states that «Safety investigation authorities shall record in the central repository all Safety Recommendations received from third countries».

In order to comply with above requirement, ENCASIA approved a procedure that will allow ENCASIA Safety Investigation Authorities to enter in the ECR, through the SRIS2, those Safety Recommendations coming from safety investigations conducted by third country Safety Investigation Authorities for which they have accredited representatives for.

Also, ICAO Annex 13, at provision 8.3, states that « If safety recommendations are addressed to an organization in another State, they shall also be transmitted to that State's accident investigation authority». This means that Safety Investigation Authorities should be able to receive recommendations not only when they are

accredited for a foreign investigation, but also when Safety Recommendations result from other sources, including safety studies.

However, the current EU regulation doesn't require to insert responses and response assessments for these Safety Recommendations received from third countries, as it obliges Safety Investigation Authorities to undertake this only for Safety Recommendations issued by ENCASIA Safety Investigation Authorities.

Furthermore, it has been agreed that EASA will enter in the system all safety recommendations received from third country Safety Investigation Authorities addressed to the Agency and/or to the European Commission.

This new procedure will allow to insert Safety Recommendations received from third countries as of 1st January 2022.

4.7) Working Group 7: ICAO Matters

A new working group was created with the aim that ENCASIA would coordinate proposed positions on ICAO proposed updates and amendments regarding Annex 13; and keep up to date a mapping of Regulation (EU) No 996/2010 against Annex 13, which would be used when a Member State would be audited by ICAO or to update the Electronic Filing of Differences. The group would also assist to identity areas in Annex 13 for which Regulation (EU) No 996/2010 alone does not ensure full compliance and where other SIA procedures or updates in national law might be needed, as well as with regard to coordinating ENCASIA views to help EU member States in responding to ICAO State Letters when they propose amendments to Annex 13

The Work Programme on this new working group read as follows:

Working Group on ICAO matters*: It is proposed to create a new working group to initiate an ENCASIA coordination process when ICAO States Letters include proposals for changes related to safety investigations and/or Annex 13. This group also deals with mapping the provisions of Annex 13 to those of Regulation (EU) No 996/2010. Representatives from SIAs from France, Germany, Italy and Poland worked on this topic jointly in the past years.*

Mr Boguslaw Trela (Poland) was nominated as Chair of this working group.

Chapter 5:
DATA ANALYSIS OF THE SAFETY RECOMMENDATIONS INFORMATION SYSTEM

ENCASIA is required by Regulation (EU) No 996/2010, Article 7.3(g), to analyze the safety recommendations that have been entered onto SRIS and to identify important Safety Recommendations of Union Wide Relevance (SRUR). This analysis is carried out by WG6.

While this Annual Report refers to data that was entered onto SRIS up to 31 December 2021, the analysis of the data was carried out by WG6 on data available on SRIS up to 9 December 2021.

The capability of the new system in extracting aggregated data, mentioned in the previous paragraph, became available only toward the end of the year, delaying the analysis of safety recommendations and the production of the statistics for this report.

5.1) SRIS overview

As of 28 January 2022, 4,122 safety recommendations had been recorded on SRIS, of which 231 were issued in 2021.

Comparing the historical number of safety recommendations against the new system, it was noted a marginal misalignment with previous statistics. In fact, SRIS 2 was able to streamline data according to the ENCASIA policy of avoiding the same serial number for safety recommendations sent to multiple addressee. This policy has been implemented only after 2016 in order to facilitate tracking of actions carried out by each addressee. For this reason the number of overall safety recommendations in the database appears now slightly increased from previous reports.

The following charts provide a summary of the safety recommendations on SRIS.

Chart 1 shows the total number of safety recommendations issued by each state (blue) and the SRs recorded on SRIS in 2021 (orange). Of note, due to Brexit, the UK safety recommendations that have been issued after 2020 are not included in the ECR-SRIS and, consequentially, in the graph below.

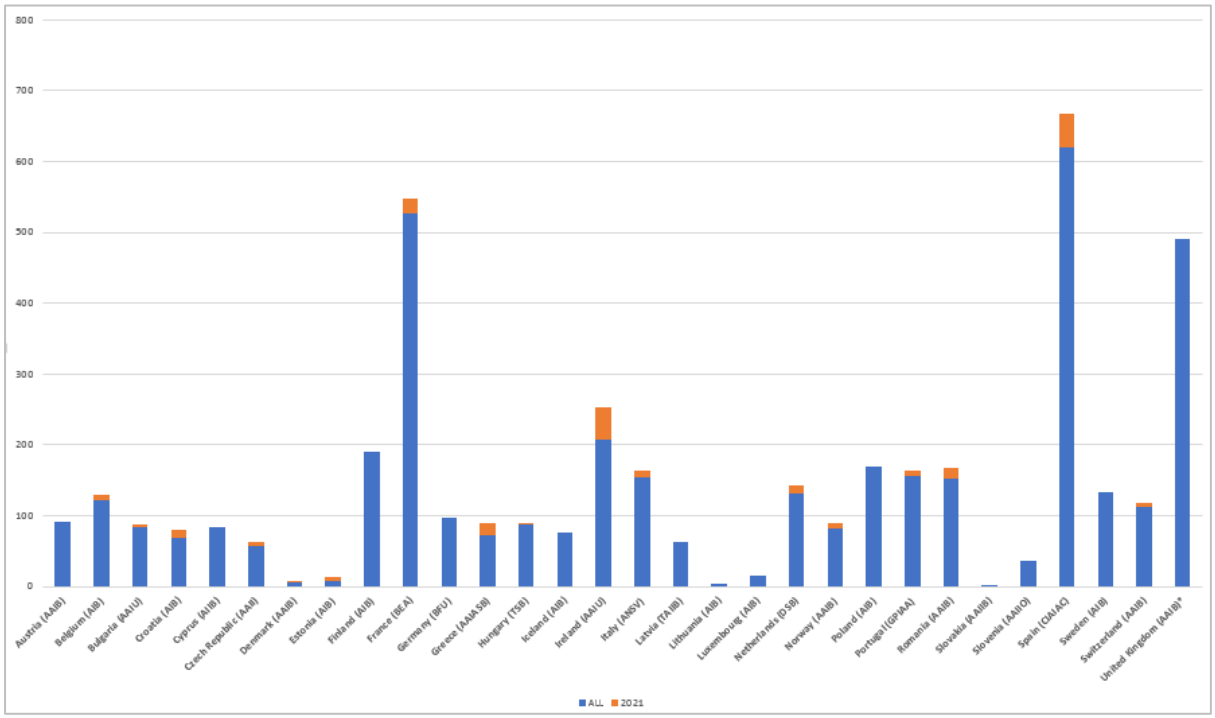

Chart 1. Summary of safety recommendations recorded on SRIS by State[4].

[4] Due to Brexit, the UK safety recommendations that have been issued after 2020 are not included in the ECR-SRIS

Chart 2 shows the number of safety recommendations recorded on SRIS by year.

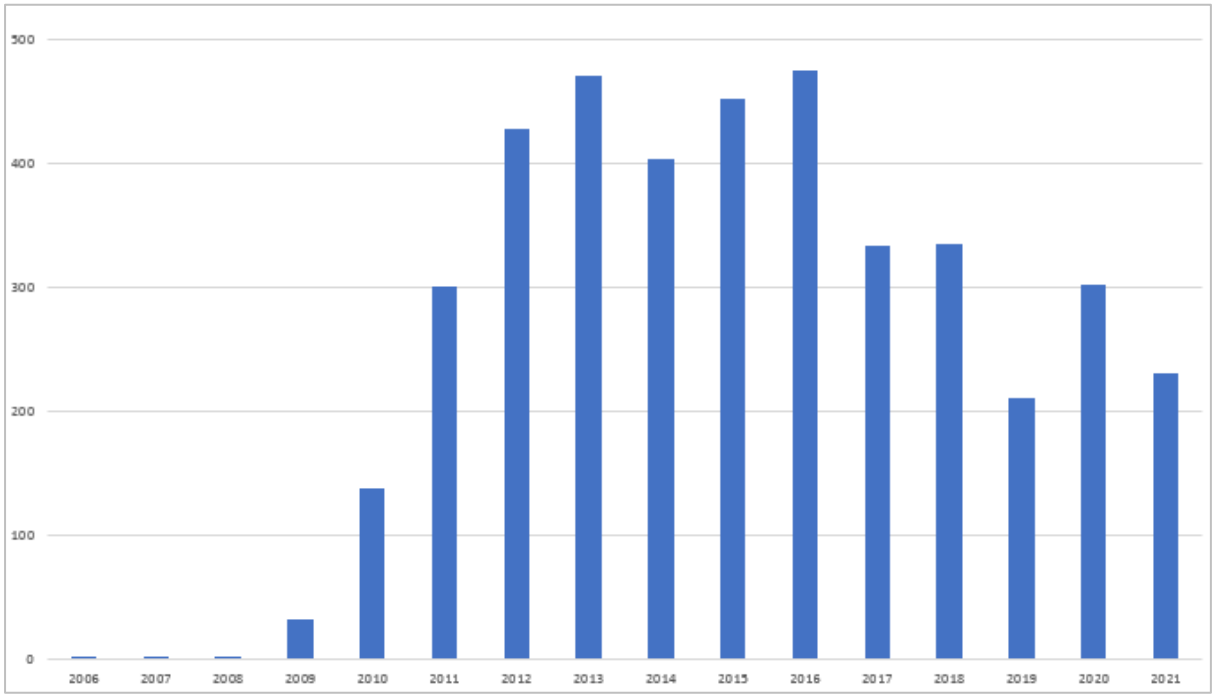

Chart 2. Number of safety recommendations recorded on SRIS by year.

It should be noted that there is usually a delay in the entry of SRs into SRIS by SIAs. This generally leads to an increase of the previous year's SR number by approximately 15% within the first months of the following year. The delays in the implementation of SRIS2 and the initial difficulties related to the stability of the system, possibly impacted even further the number of SR not yet inserted in the database.

5.2) Safety Recommendations of Union-wide Relevance

A Safety Recommendation of Union Wide Relevance (SRUR) is defined as meeting one or more of the following criteria:

- The deficiency underlying the safety recommendation is systemic, not related to a specific aircraft type, operator, manufacturer component, maintenance organisation, air navigation service and/or approved training organisation, and is not solely a national issue, or;
- There is a history of recurrence across Europe of the relevant deficiency.

In 2021, there were 15 safety recommendations that were assessed as being a SRUR and covered the following safety issues, which are expanded in Appendix 2. They cover the following subjects:

- SAR operations.
- Lack of standardization and guidelines for the conduct of examinations.
- Crew alert and associated procedure in the event of a cargo door becoming fully open in flight.
- Installation on board of aircraft operating under VFR in class "G" airspace, as mandatory equipment, of anti-collision systems or systems designed to detect the proximity of other aircrafts.
- Introduction of common harmonized minimum requirements for Annex 1 aircraft below 600 kg MTOM.
- Parachute jumping operations.
- Revision of international regulation.

5.3) Safety Recommendations of Global Concern

16 Safety Recommendations issued in 2021 by ENCASIA member States were classified as being of Global Concern, as outlined in Appendix 2.

5.4) Safety Recommendations topics

Each safety recommendation is assigned a topic that best indicates the area that the safety recommendation addresses. The topics are allocated to three levels, with Level 1 being the highest and covering four topics. Each Level 1 topic is further broken down into sub-topics.

Chart 3 shows the Level 1 topics with the number of those assigned to each category. From Chart 3, it can be seen that most of the safety recommendations raised during 2021, as in previous years, were related to procedures or regulations.

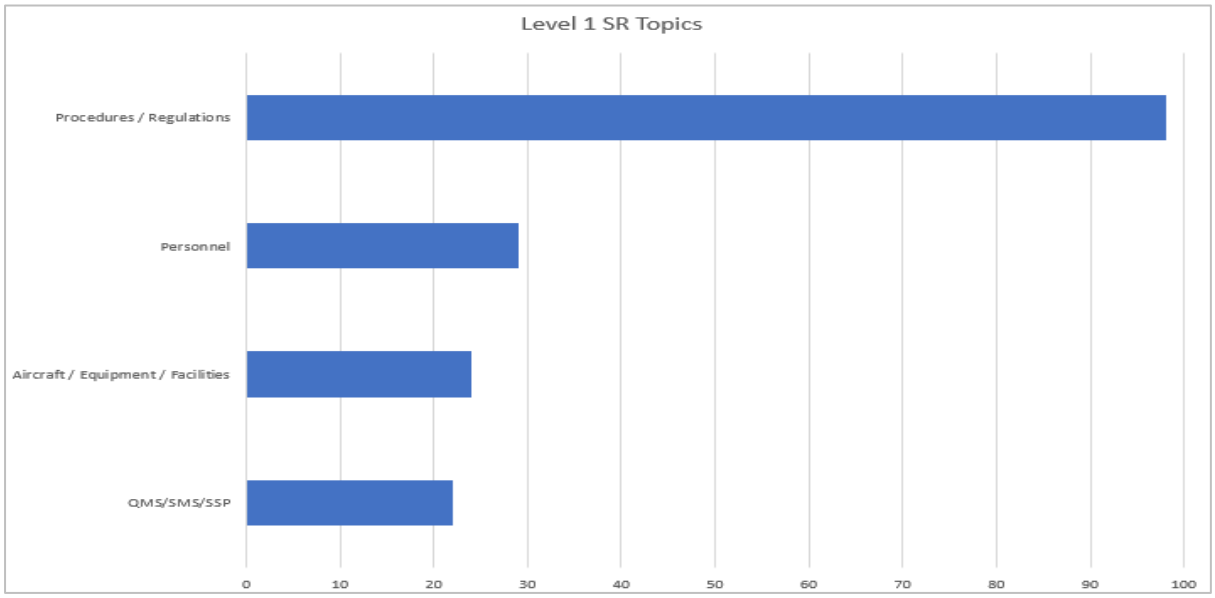

Chart 3. Level 1 safety recommendation topics.

Charts 4, 5, 6 and 7 show the Level 2 topics for each of the higher level 1 topics. Chart 8 shows a further breakdown of the topics related to aircraft equipment, with the majority of these related to Powerplant.

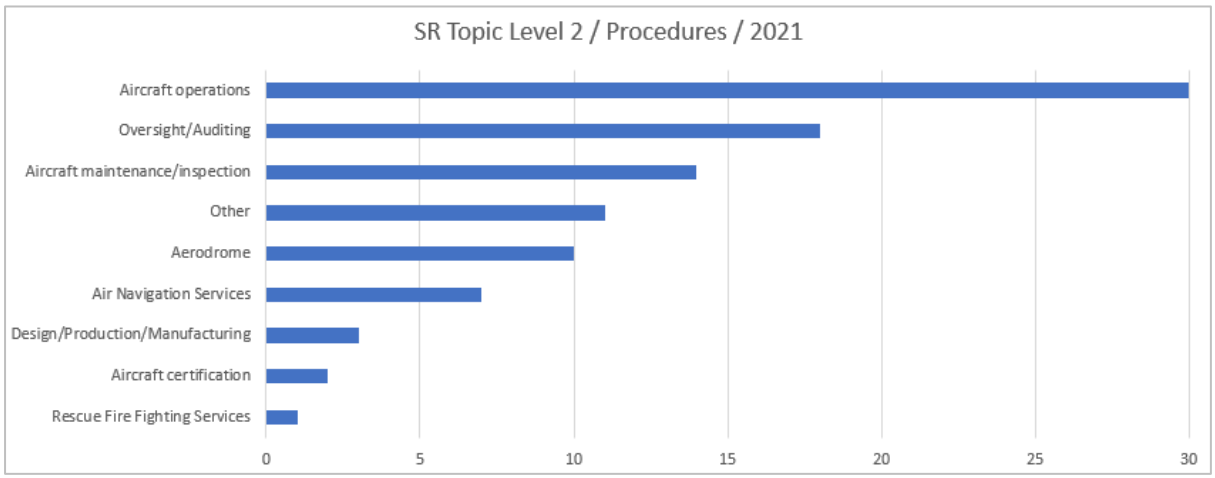

Chart 4. Level 2 safety recommendation topics relating to Procedures and Regulations.

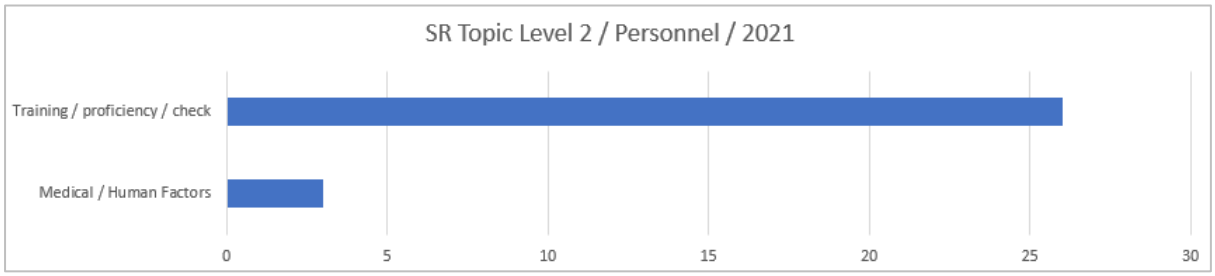

Chart 5. Level 2 safety recommendation topics relating to Personnel.

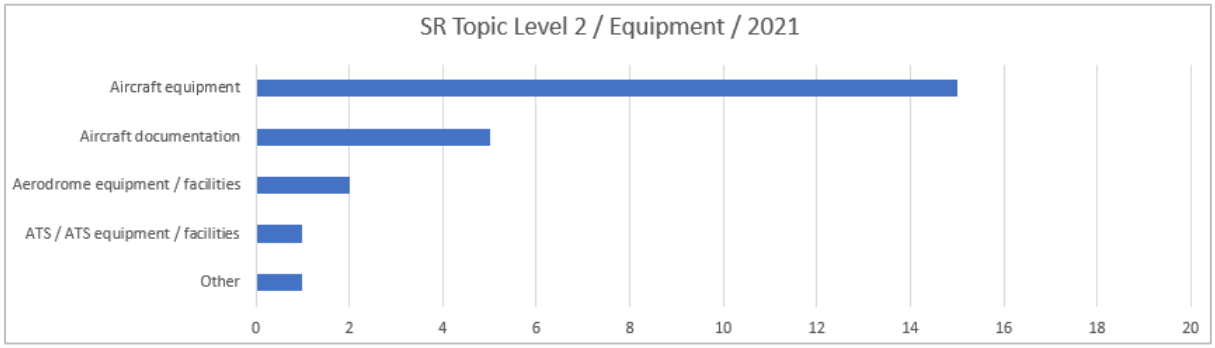

Chart 6. Level 2 safety recommendation topics relating to Aircraft Equipment / Facilities.

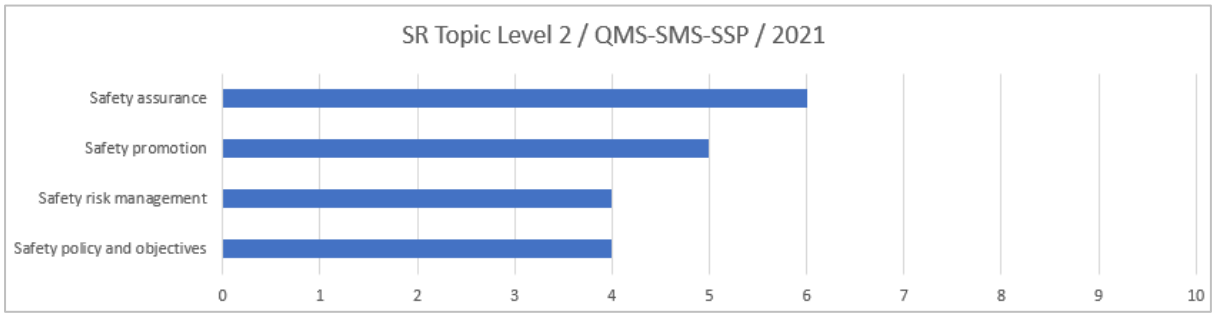

Chart 7. Level 2 safety recommendation topics relating to QMS/SMS/SSP.

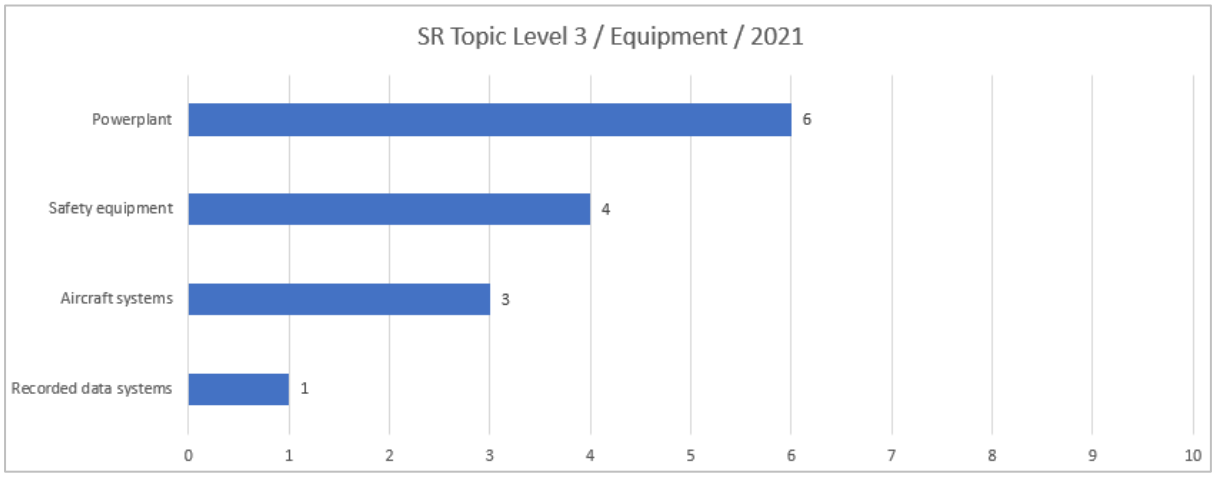

Chart 8. Level 3 safety recommendation topics relating to Aircraft equipment.

5.5) Safety Recommendations addressees

Most of the safety recommendations issued during 2021 were addressed to Civil National Aviation Authorities (NAA) (30%), followed by Aircraft Operators (20%) and National Authorities (13%). The term 'National Authority' is used to refer to authorities that are not involved in the regulation of Civil Aviation (i.e. State Ministers, National associations, etc.). The number of safety recommendations addressed to EASA further decreased from 38 in 2019 to 24 in 2020 to 17 in 2021 (8% of total SRs). WG6 reviewed this data by cross referencing with EASA, which reported 20 safety recommendations addressed to the agency in 2021 by ENCASIA member states, meaning that some SIA might still have to update the new SRIS database.

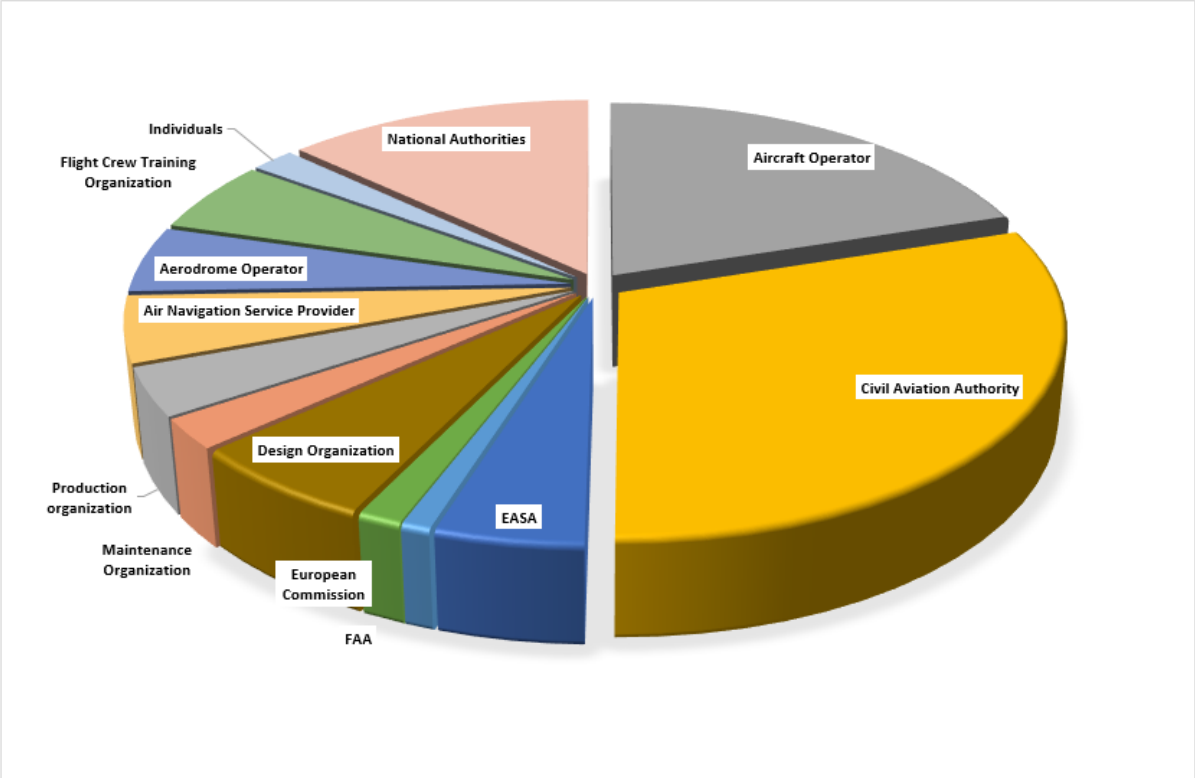

Chart 9. Addressees of Safety Recommendations issued in 2021.

5.6) Safety Recommendations response assessment by SIA

Article 18 of Regulation (EU) No 996/2010 requires addressees to respond within 90 days of receiving a safety recommendation. Within 60 days of the receipt of the reply, the SIA shall inform the addressee whether or not it considers the reply adequate and give justification when it disagrees with the decision to take no action.

Of the 231 safety recommendations issued in 2021, 50 (32%) are still awaiting a response, while 41 responses are still awaiting the assessment of SIAs. In 2020 the number of responses awaiting the assessment of SIAs was 14, in 2019 this number was 26 and, in 2018, 35.

A breakdown of the SIA's assessment of responses to safety recommendations issued during 2021 is summarised in Chart 10.

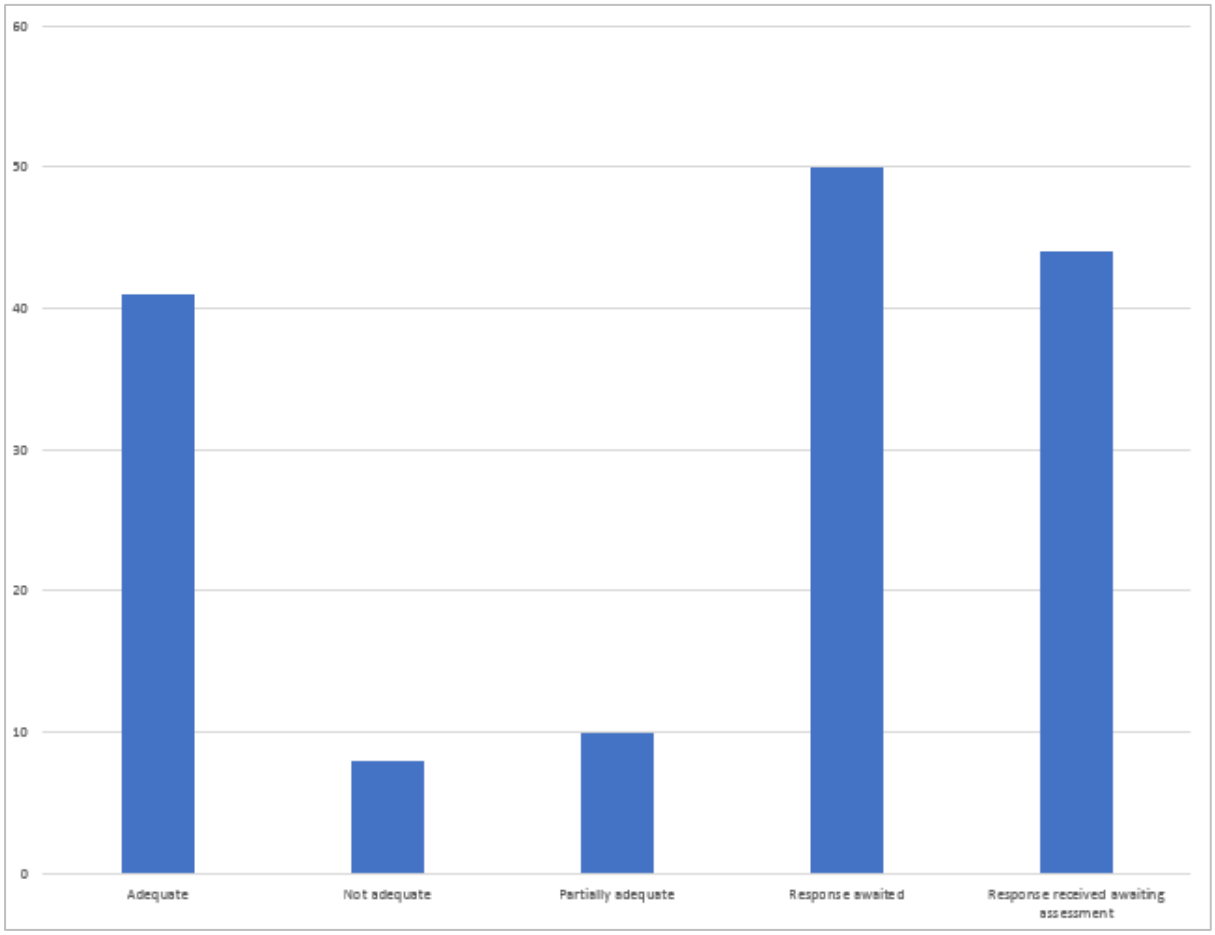

Chart 10. SIA's assessment of responses to safety recommendations issued in 2021

Chart 11 shows the current response assessments for previous years.

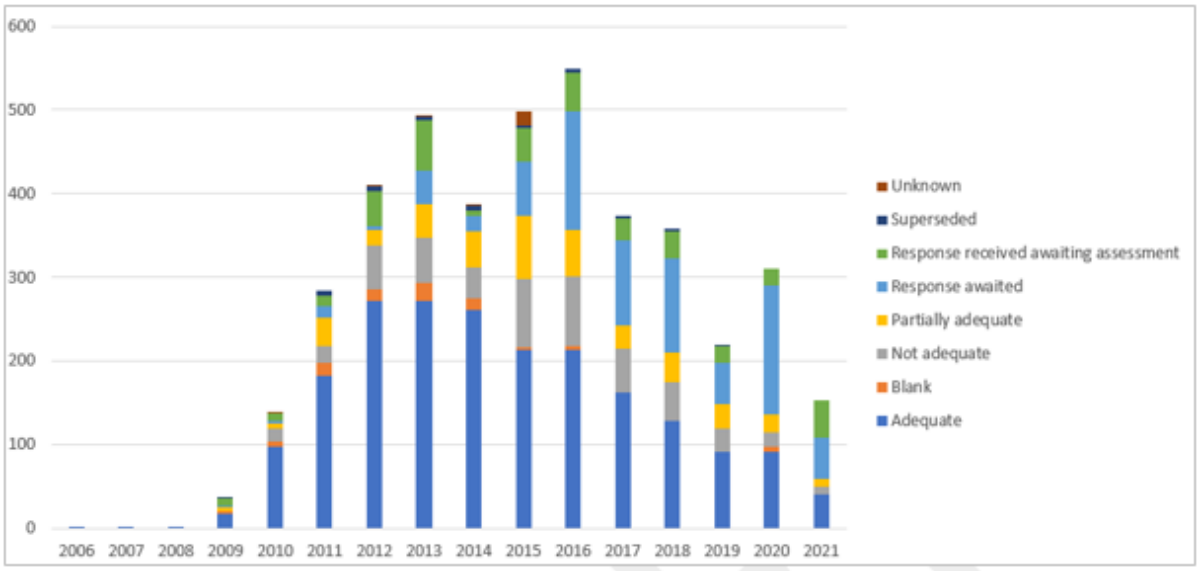

Chart 11. Response assessments for safety recommendations

Of note, there is still a significant percentage of responses in the status of "awaited". WG6 is continuously monitoring the situation and working with the relevant states to understand the reasons for the delay/lack of responses while the delays in originator's assessment observed in the previous years has been furtherly reduced in 2021.

5.7) Update on 2020 Safety Recommendations

The ENCASIA Annual Report for 2020 stated that as of 15 December 2020, 243 safety recommendations had been recorded on SRIS for 2020. An additional 60 safety recommendations for this period were entered during 2021, for a total of 303 safety recommendations recorded on SRIS as having been issued in 2020.

5.8) Safety studies

During 2021, 7 safety recommendation has been generated from safety studies. In particular:

Two safety recommendations were issued by the ANSV (Italy) and addressed to the Aeroclub d'Italia in the area of ultralight operations and six safety recommendations issued by DSB (Netherlands) and addressed to the Dutch Minister of Infrastructure and Water Management, the Dutch Minister of Justice and Security, EASA and the

European Commission, related to the study conducted on "Safe flight routes – Responses to escalating conflicts".

CONCLUSIONS (THE WAY FORWARD)

ENCASIA continues to strive with a Work Programme in various areas, wherein the EMSS continues to be developed to assist in future investigations, as well as the Phase 2B of the Peer Review will kick off in 2022 with two pilot project. Noteworthy also is the commencement of the new Working Group related to ICAO matters, which would play an important role when ICAO State Letters are received.

ECCAIRS 2 and the new SRIS database remain an ongoing working project; with 2022 being hopeful for continuing to achieve the reliability and stability of the systems.

ENCASIA also envisages the organisation of a workshop that would focus on the relationship between safety investigations and the judicial authorities, with the latter being invited to attend and participate. Provided there is sufficient participation from judicial authorities, this would provide a channel of communication between the 2 areas to better understand the differences between the 2 types of investigations, highlighting the obligations under Regulation (EU) No 996/2010 and improve the coordination, while also maintaining the independence of each investigation.

ENCASIA will continue to attend the RAIO ICM CP meetings, however, emphasising that it is the ICM model that seems to better suit the international framework on the matter. In this regard, the ICAO guidance[5] on RAIOs is expected to be reviewed in 2021 and could be updated to include the different concepts of Regional Accident Investigation cooperation mechanisms at regional or at different levels.

It is also important to be mindful of the challenges with regard to investigations that result from civil spaceflight operations, drones, parachute operations as well as electric powered aircraft, and the possible legal framework, and safety investigation procedures that would result in order for the aviation industry to be better equipped to address accidents and incidents that would result therefrom.

Finally, ENCASIA is also exploring the possibility of reviewing its current way of managing funds from the Commission grant. One option being explored would be to eliminate the notion of the asbl and entrust a chosen SIA to manage the ENCASIA grant on behalf of the other members. The main objective is to ensure that ENCASIA would become more robust from a financial standpoint.

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[5] Doc 9946, Manual on Regional Accident and Incident Investigation Organization

APPENDICES

Appendix 1: List of 2021 fatal accidents involving commercial activities

Appendix 2: Safety Recommendations of Union-wide Relevance and of Global Concern

Appendix 1: List of 2021 fatal accidents involving commercial activities

Flight Global mentioned that the world's airlines suffered 15 fatal accidents in 2021, causing a total of 134 deaths. Comparing these numbers to those in 2019 – the last year of pre-pandemic normal operations – the figures then were respectively 22 and 297.

In the first full year of operations affected by the Covid-19 crisis – 2020 – there were 12 fatal accidents and 332 fatalities, but flight numbers were down by more than 70% compared with pre-pandemic years. In 2021 commercial air transport had begun to recover, but traffic was still well short of normal levels.

Within the 12-month period there was only one fatal accident involving a large passenger jet: a Sriwijaya Air Boeing 737-500 which crashed in Indonesia. All 62 people on board died in the 9 January 2021 accident.

The year's second-deadliest accident happened on 6 July, when an Antonov An-26 operated by Kamchatka Aviation Enterprise crashed into a cliff while on approach to Palana, Russia. All six crew members and 22 passengers were killed.

Approach and landing accidents caused the largest proportion of fatal crashes in 2021, specifically nine out of the total 15 fatal mishaps. All of these involved turboprop aircraft, most of them on non-precision approaches.

While the total accidents and fatalities were both unexceptional when ranked against air safety statistics from recent years, comparisons with pre-pandemic numbers are of limited value because of the marked reduction in commercial airline activity in both 2020 and 2021.

Except one, all of those accidents did not involve aircraft registered, manufactured, designed in one European Member State or operated by an operator registered in a European Member State.

#	Date	Location	Aircraft type	Air carrier	No. of fatalities
1	9 January	In sea off northern Java coast, Indonesia	Boeing 737-500	Sriwijaya Air	62
2	2 March	Near Pieri, South Sudan	Let L-410UVP-E	South Sudan Supreme Airlines	10
3	20 March	Near Marsabit, northern Kenya	Cessna 208B Caravan	Aeronav Air Services	2
4	16 June	Near Bukavu-Kavumu airport, Democratic Republic of Congo	Let L-410UVP-E	Kin Avia	3
5	6 July	Near Palana airport, Kamchatka, Russia	Antonov An-26	Kamchatka Aviation Enterprise	28
6	8 July	Near Villavicencio, Colombia	DC-3	Aliansa Colombia	3
7	12 September	Near Kazachinskoye airport, Russia	Let L-410	Siberian Light Aviation	4
8	15 September	Near Bilogai/Sugapa airport, Indonesia	DHC-6 Twin Otter 300	Rimbun Air	3
9	5 October	Thomson County airport, Georgia, USA	Dassault Falcon 20C	Sierra West Airlines	2
10	25 October	Ilaga airport, Papua, Indonesia	Cessna Caravan	Smart Cakrawala Aviation	1
11	2 November	Near Juba airport, South Sudan	Antonov An-26	Optimum Aviation	5
12	13 November	Beaver Island, Michigan, USA	Britten-Norman BN-2 Islander	Island Airways	4
13	10 December	Near Manchester-Boston airport, USA	Swearingen SA-226AT Merlin IV	Castle Aviation	1
14	21 December	Near Fulshear, Texas, USA	Cessna Caravan	Martinaire	1
15	23 December	Near Keisha, Democratic Republic of Congo	Short 360-300	Malu Aviation	5

Table 1. List of 2021 fatal accidents involving commercial activities (source: Flight Global)

Note: Military and State transport aircraft accidents were not included in the table.

Appendix 2: Safety Recommendations of Union-wide Relevance and of Global Concern

A) Safety Recommendations of Union-wide Relevance

SAR operations.

The AAIU (Ireland) opened a safety investigation for the accident that occurred to a Sikorsky S-92A helicopter, which was being operated by a commercial operator on behalf of the Irish Coast Guard (IRCG). The helicopter was en route from Dublin, on Ireland's east coast, to Blacksod, Co. Mayo, on Ireland's west coast. The Flight Crew's intention was to refuel at Blacksod before proceeding, as tasked, to provide Top Cover for another of the Operator's helicopters, which had been tasked to airlift a casualty from a fishing vessel, situated approximately 140 nautical miles off the west coast of Ireland. At 00.46 hrs, on 14 March 2017, while positioning for an approach to Blacksod from the west, the Helicopter, which was flying at 200 feet above the sea, collided with terrain at the western end of Black Rock, departed from controlled flight, and impacted with the sea.

Forty-two Safety Recommendations were made as a result of this safety investigation.

In particular, the AAIU (Ireland) classified as SRUR the following recommendations:

- *The European Commission should carry out a review of how SAR is managed in EU member states with a view to identifying best practice/minimum safety standards and, as appropriate, promulgating guidance for SAR operations using civil registered aircraft, which at the moment are excluded from Regulation (EU) No 2018/1139 so that an appropriate and uniform level of basic safety will apply in civil SAR operations throughout Europe. [Safety recommendation: IRLD2021033] (SRUR)*
- *EASA should carry out a safety promotion exercise, in parallel with the development of certification specifications for human factors in the design of rotorcraft cockpits, to provide operators of in-service helicopters with a best practice guide to mitigate the risks associated with human factors and pilot workload issues. [Safety recommendation: IRLD2021040] (SRUR)*

Lack of standardization and guidelines for the conduct of examinations.

During a proficiency check for the renewal of a SEP (Single Engine Piston) rating, the aircraft experienced a tail strike.

AAIU(Be) learnt about the occurrence via the report that was sent 3 days later by the aircraft owner via the European Aviation Safety Reporting Portal. At that time it was categorized as "incident" because no damage and no injuries were reported. There was also no indication that an accident with injuries was "nearly avoided". On 9 August of that year it was reported that structural damage to the tail cone was found. Based on that information the occurrence was re-classified as an accident. Because of that and because it was felt that some operational safety lessons could be learnt from this event, AAIU(Be) decided to initiate a safety investigation.

In its final report, the AAIU (Belgium) issued several safety recommendations. The following one was classified as SRUR:

It is recommended that EASA incorporates in the projected EASA FEM[6]:

- *a thorough description on which items to be included in the preflight briefing (such as the designation of the PIC, handover of controls, the roles in the event of an actual emergency, method of simulated emergencies).*
- *the guidelines (that were part of the former JAA FEM) and a formalized prior risk assessment on performing simulated emergency landings during PPL test and SEP check flights.*

[Recommendation BE-2021-0003] (SRUR)

Crew alert and associated procedure in the event of a cargo door becoming fully open in flight.

On the 20th of June 2011, an Airbus A320 aircraft scheduled for a flight from Funchal (LPMA) to Copenhagen (EKCH) encountered a flock of seagulls, during the take-off roll, close to the rotation speed. Some of the birds were ingested into both engines resulting in intense vibration which was felt throughout the aircraft. The crew declared mayday and returned immediately to the airport. The aircraft performed a safe overweight landing on runway 05, in just over 3 minutes since taking-off and suffering the multiple bird strike.

[6] Flight Examiners' Manual.

During the landing-roll, as the aircraft decelerated below 80kts, the crew received the DOOR FWD CARGO master caution message on the ECAM'S, confirmed by the tower who saw that the cargo door was open, while the aircraft was taxiing to the stand.

The investigation concluded that the aircraft encountered a flock of seagulls during the take-off run, some of which struck the fuselage and were ingested in the engines. One of the birds directly struck the forward cargo door handle flap, penetrating the recess and forcing the handle out. The analysis conducted of the door handle demonstrated that once exposed to the air flow, the aerodynamic drag force is sufficient to overcome the cargo door locking mechanism, and ultimately result in the unlatching of the door, as was the case in the event.

Beside several safety actions taken after the event by the manufacturer and the airport service provider, the GPIAA (Portugal) issued following safety recommendation classified as SRUR:

- Airbus should develop, for the Airbus A320 family, a crew alert and associated procedure in the event of a cargo door becoming fully open in flight (unlock and unlatched condition) to ensure that the integrity of the aircraft is not compromised as a consequence. *[Recommendation PT.SIA 2021-0006](SRUR)*

Installation on board of aircraft operating under VFR in class "G" airspace, as mandatory equipment, anti-collision systems or systems designed to detect the proximity of other aircraft.

The ANSV (Italy) opened a safety investigation for an accident which occurred at Rutor glacier, La Thuile (AO) on 25 January 2019 involving a helicopter AS350 B3 and a Jodel D.140E.

Both aircraft were destroyed in a mid-air collision between the helicopter carrying out "heliski" flights and the airplane.

Both aircraft involved in the in-flight collision, although operating in isolated mountainous areas and in class "G" class airspace, where often no flight assistance/information is available, were not equipped with on-board collision avoidance systems or systems designed to detect the proximity of other aircraft. In the type of flight conducted by the two aircraft on the accident day, the principle of "see and avoid", as well as the execution self-information radio calls on the expected frequency represent safety nets sometimes insufficient to prevent in-flight collisions. A further "barrier" against possible in-flight collisions between aircraft operating under

VFR could be the presence on board of systems capable of detecting the presence of other aircraft not acquired visually or through radio communications: in this respect, systems based on GPS receivers capable of calculating and transmitting the future position of the aircraft to other nearby aircraft equipped with similar systems have been available for years, preventing the risk of possible collisions by sending alert messages to the respective crews, who thus become aware of the position of the other aircraft with respect to their own position. More advanced versions of such systems also provide for the integration of an ADS-B receiver and transponder, which allows visibility on a greater number of aircraft among those that present a position and flight path with a risk of collision.

Consequently, the ANSV (Italy), in its final report, recommended EASA to:

- *evaluate the feasibility to install on board of aircraft operating under VFR in class "G" airspace, as mandatory equipment, anti-collision systems or systems designed to detect the proximity of other aircraft. [Recommendation ANSV-8/68-19/6/A/21] (SRUR)*

Introduction of common harmonized minimum requirements for Annex 1 aircraft below 600 kg MTOM.

On September 14, 2015, an Italian registered I-B998 ultralight aircraft, took off from Viseu (Portugal) aerodrome for a local flight, with the pilot and sole occupant.

After some maneuvers close to the aerodrome, in both runway directions, and when it was located on runway 36 downwind end, the aircraft's engine stopped producing power with subsequent full stop. The pilot realized that he would not be able to reach the runway and opted for an off-field emergency landing on unprepared terrain, having collided with a large rock.

Following the ground collision, the aircraft was destroyed, the pilot suffered serious injuries and was transported to an hospital.

The investigation was conducted by the GPIAA (Portugal). The main conclusions were:

- The aircraft configuration on the accident flight did not comply with the international recommendations and standards for experimental amateur built.
- The lack of technical preparation to follow-up the international standards and norms by the pilot owner and amateur builder were on the basis of the decisions and technical solutions applied to the aircraft.
- The investigation emphasised the need for experimental aircraft owners and amateur builders, regardless of the taken options on the adopted regulatory

frameworks in each country, seek technical advice from pilot organizations, associations or communities, as well as from Aeronautical Authorities, in order to ensure that the aircraft they operate comply with the most appropriate technical requirements and standards for a safe operation.

- The investigation highlighted the lack of guidance material to the Member States, considered an essential common ground in the airworthiness standardization criteria for the aviation segment based on a self-declaratory principle.
- The investigation also considered that the adoption of a future or current European Certification Standards, even outside of basic regulation, as CS-VLA, CS-LSA or other common approval standards, is an obvious way to be considered in order to increase the safety level over the self-declared non-commercial light sport aviation industry across Europe.
- Gaps were identified in the activity regulatory framework resulted in a lack of oversight, monitoring and technical advice, from the design phase to the operation of the aircraft by the licensing entity, Aero Club d'Italia, which may had contributed to the sequence of technical and operational decisions by the pilot owner and amateur builder.

Consequently, the GPIAA (Portugal), in its final report, issued two safety recommendations:

- *It is recommended that EASA, within a defined time schedule, issue guidance material as provided for in Article 140 (4) of EASA Basic Regulation compatible with the approach set for this aircraft category, aiming to ensure a common level of safety within the European Union for the technical and operational conditions of Annex 1 aircraft below the 600 kg MTOM. Within this task, EASA, in cooperation with the European Commission, should consider assessing the current status of the regulatory framework in each Member-State regarding Annex 1 aircraft, in order to introduce common harmonized minimum requirements. [Recommendation PT.SIA 2021-0005] (SRUR)*
- *The Aero Club d'Italia is recommended to, within its competences, reassess the regulatory framework of its scope to ensure an effective control of the aircraft operating outside Italian territory and mentioned in DPR n. 133 of July 9, 2010. Aero Club d'Italia should also contribute to a process of convergence towards the European standardization of its aircraft validation requirements that are out of the Basic Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018. [Recommendation PT.SIA 2021-0004] (SRUR)*

Parachute jumping operations.

The ANSV (Italy) opened a safety investigation for an accident occurred on 20 September 2020, near Cremona, in which a skydiver, while performing track suit (similar to wing suit) jump from 4000 meters, collided at approximately 2700 meters with the aircraft from where he had jumped off. Both the skydiver and the pilot lost their lives in the accident.

The investigation concluded that contributing factors to the accident were: Inadequate coordination between the pilot and the skydiver with respect to their respective descent and tracking trajectories;

The meteorological conditions present at the time of the skydiver's exit from the aircraft, which took place in cloud and not in visual contact with the ground, in a situation, therefore, incompatible with VFR flight rules and ENAC regulations for parachuting activities;

The lack of codified procedures at the Italian (national) level that integrate skydiving procedures with those of aircraft operators used for skydiving operations, including deconfliction between descending aircraft and skydivers performing track or wingsuit jumps..

Furthermore, the report highlighted that it is not possible to assimilate operation of aircraft for skydiving activity with the ordinary flight activity carried out for instance in navigation with general aviation aircraft. In fact, it is believed that it is essential to know the techniques and procedures of the various skydiving disciplines to be able to operate safely. The targeted training is a prerequisite for the safe execution of critical maneuvers, such as take-off with full load, ascent and slow flight with full load and without a door, or load and without a door, or CG changes during launch, high altitude operations, or to be able to handle special emergency situations peculiar to parachuting operations.

Four safety recommendations were issued in the final report. Two of them were addressed to EASA and classified SRUR/SRGC:

- *The ANSV recommends to reconsider the provisions of EU Regulation n.965/2012, Annex VII Part NCO, by extending to operators that carry out non-commercial parachute jumping activities, the requirement for an Operations Manual that defines the procedures and methods of use for each aircraft type used to carry out such activity at each specific location. [Recommendation ANSV-13/478-20/1/A/21] (SRUR/SRGC)*

In 2020, following an accident involving an aircraft used for skydiving operations, the ANSV addressed to ENAC the recommendation ANSV-8/1356-17/1/A/20, recommending specific familiarization training program for pilots conducting parachuting activities in order to safely operate an aircraft on which he had no previous experience.

The ANSV recommended that familiarization flights should also be provided when a pilot intends to conduct parachuting activities on an aircraft in the class of aircraft in which he/she is qualified to fly (in this case, the SEP class), but in which he/she had no previous flying experience.

ENAC response was that it was not possible at the moment, given the clear contrary position of EASA, an intervention on current regulation. A possible revision of the AIR OPS or FCL regulations could be the subject of a recommendation by ANSV addressed directly to EASA.

In the light of the above response, given by ENAC to the safety recommendation ANSV-8/1356-17/1/A/20, the ANSV recommends:

- *EASA to provide, within the scope of the Part FCL ratings, the Parachute rating, including a detailed training programme for pilots intending to perform aircraft operations for skydiving activities. [Recommendation ANSV-14/478-20/2/A/21] (SRUR/SRGC)*

Revision of international regulation.

The ANSV (Italy) opened a safety investigation on a serious incident occurred on 10 August 2019 at Rome Fiumicino airport (Italy) to a Boeing B787-8 which suffered an engine failure after take-off and debris were released over a populated area.

Three safety recommendations were issued in 2019 before the completion of the investigation.

The final report highlighted that the radial projection of the parts was contained within the engine, while the axial projection occurred allowing about 38,2 kg of parts to fall over the city of Fiumicino, several hundred of fragments, at high temperature (TGT at the time of the failure 876 °C): these fragments may represent an example of what is defined as PDA in the CM-21.A-A-001 dated 29th November 2018.

Consequently, the ANSV, in its final report, issued five more safety recommendations classified as SRUR/SRGC:

- *The ANSV recommends EASA to evaluate the opportunity of revising the risk assessment related to people on ground being hit by PDA, considering in the most conservative way the different specific scenarios for each phase of flight for the improvement of safety. Special attention should be given to people living nearby the airports.*
  The results should be taken into account for the next certification requirements. [Recommendation ANSV-10/1147-19/4/I/21] (SRUR/SRGC)
- *The ANSV recommends EASA and FAA to evaluate a revision of the CS-E and AC33.75 in order to provide a clear definition of high energy debris including what constitute a risk for the aircraft and people on board, but also for people on the ground in the framework of the different phases of flight. Special attention should be given to people living nearby the airports. [Recommendations ANSV-11/1147-19/5/I/21 and ANSV-11/1147-19/6/I/21] (SRUR/SRGC)*

The investigation concluded that the ejection of fragments from the engine was the result of a corrosion-fatigue phenomenon, made possible by an improvable design in terms of methodology and type of coating in addition to base material composition of the IPT blades.

Based on the above considerations, taking into account the statistics of accidents and incidents, the actual air traffic and technological limits based on the state of the art, it seems appropriate to periodically review the validity of the maximum allowable probabilities of occurrence. This should be done setting achievable standard levels of reliability, compatible with the actual state of the art. This would have a direct positive impact in terms of preventing all those events in which technical factor is causal or contributing.

- *Taking into account the actual accident and incident statistics, the actual volume of traffic of the commercial transportation and the actual technology state of the art, the ANSV recommends EASA and FAA to evaluate a periodic revision of the maximum allowable probabilities of occurrence used in the CSs and Part21 (FAA regulation: AC25 25.1309-1A, AC33-75, AC39-08), establishing clear calculation methods. This has the aim to improve the safety, setting achievable standard levels of reliability, compatible with the actual state of the art. [Recommendation ANSV-12/1147-19/7I/21 and ANSV-12/1147-19/8/I/21] (SRUR/SRGC)*

B) Safety Recommendations of Global Concern

Following safety recommendations, issued in 2021, were classified only as SRGC:

- *The Investigating Committee of Transportation Safety Bureau (TSB Hungary) found during its investigation that, in some circumstances, the PW-5 sailplane is prone to stalling during winch launch. Therefore, Transportation Safety Bureau recommended the manufacturer, to include in the Flight Manual of the PW-5 sailplane that winch launch is not recommended during student pilots' transition training for that type. [Recommendation BA2018-169-4_1] (SRGC)*

- *In order to prevent landings with frozen brakes, the AIB (Denmark) recommends that EASA in cooperation with the aircraft manufacturer of Falcon 900EX modify in a more directive and explicit manner the AFM normal procedures (including the use of the brake heating system) and that the aircraft manufacturer accordingly modifies the CODDE 2. [Recommendation DK.SIA-2021-0001] (SRGC)*

- *The AIB (Denmark) recommends that EASA in cooperation with the aircraft manufacturer of Falcon 900EX re-evaluate the initial airworthiness Post-Failure Situation Sheet for blocked wheels and the continued airworthiness Significant Event Review for frozen brakes. [Recommendation DK.SIA-2021-0002] (SRGC)*

- *The AAIB (Switzerland) recommends that the FOCA should, in cooperation with aerodrome operators and the emergency services which are usually involved in accidents involving aircraft, take measures to raise awareness of the hazards posed by electrically powered aircraft and how these can be countered. [Recommendation 572] (SRGC)*

- *The AAIB (Switzerland) recommends that the FOCA should supplement the aircraft register with an entry for electrically powered aircraft. [Recommendation 571] (SRGC)*

- *The AAIB (Switzerland) recommends that the European Union Aviation Safety Agency (EASA), in cooperation with the aircraft manufacturer, should ensure that the seat belt attachment points can withstand such forces in all aircraft types which have an airframe similar to the Alpha Electro 167. [Recommendation 570] (SRGC)*

- *The AAIB (Switzerland) recommends that the European Union Aviation Safety Agency (EASA) should ensure that the aircraft manufacturer adapts the propulsion unit's cooling system in such a way that the failure of a single system*

component, such as the circulating pump, does not significantly affect cooling and consequently motor power. [Recommendation 569] (SRGC)

- *Through the years, the airworthiness standards and conditions for fuel valves were regularly adapted to increase the level of safety. Already in 1959 the regulations were adapted to require means to guard inadvertent operation of the shutoff valves. Although not required to do because of its older certification basis, Beechcraft decided to provide a stop on the fuel selector valve in the early 80's. AAIU(Be) understands and concurs with the vision that it is impracticable and that would it be an enormous economic burden to completely re-design every current (Supplemental) Type Certificate to the new standards every time they are published. However AAIU(Be) is also convinced that what concerns the layout of flight controls this is not that unfeasible. With a rather small effort a big advantage in safety can be achieved by eliminating possible flight crew errors, which is still a major contributor to aircraft accidents. Currently it is possible that existing aircraft models, based on older certification basis, are upgraded to newer standards by the manufacturer (to stay competitive amongst others) but that a modification by an STC based on standards of tens of years ago can eliminate the benefits and degrade the level of safety. For this reason, AAIU (Belgium) recommends that the FAA revises their approach for the validity of Supplemental Type Certificates and on a regular basis review the STCs in order to verify if on the area of equipment design it can't be modified to improve the level of safety and to minimize flight crew errors, which could result in additional hazards. [Recommendation BE-2020-0006] (SRGC)*

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