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FOREWORD

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

On 8 February 2017, the ENCASIA members elected their chairman and deputy chairman for a three-year mandate. During that time, ENCASIA achieved a number of key objectives, in particular the first cycle of peer reviews and important milestones in setting up the ENCASIA Mutual Support System (EMSS).

During these years, I have been glad to note an increasing involvement of ENCASIA members in our working groups and cooperative activities. It is crucial that we maintain this momentum for the coming years. I believe that ENCASIA represents one of the best examples of regional cooperation in safety investigations throughout the world. The topic of RAIOs became an important item during the ICAO 40th session of the Assembly late September 2019. Simultaneously, ENCASIA held a plenary meeting in a different location than Brussels; it was in September 2019, in Warsaw, at the kind invitation of the Polish safety investigation authority. That plenary meeting was organised in conjunction with an important workshop on Peer Reviews and EMSS. This illustrates the growing involvement of a number of ENCASIA members.

The other working groups have also been very active, in particular the group on safety recommendations that also held a workshop in 2019 and has a lot to report in this document.

The beginning of the three-year mandate will be characterized by uncertainties regarding the contribution of our UK colleagues because of Brexit. Since the beginning of ENCASIA, the commitment of the AAIB-UK has never failed. They have continued in 2019 to strongly contribute to ENCASIA activities dedicated to improving safety investigation methods and ultimately aviation safety.

In this evolving context, ENCASIA will need even more contributions from its members to meet the objectives set out Regulation (EU) No 996/2010, which are to seek to further improve the quality of investigations conducted by safety investigation authorities and to strengthen their independence. The aim also consists in encouraging high standards in investigation methods and investigator training.

This report also contains a list of fatal accidents that occurred in 2019 to commercial aviation worldwide. We can note the two worst accidents that caused the highest number of fatalities involved new airplane modes, such as the Boeing 737 Max and the Sukhoi SuperJet. This shows how challenging it remains to making aviation accident proof and to seamlessly incorporating the lessons learned of the past.

This report highlights the ENCASIA main activities undertaken in 2019. I hope that you will enjoy learning more about ENCASIA's endeavours.

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 28 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 ninth 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:

https://ec.europa.eu/transport/modes/air/encasia/activities_en or www.encasia.eu.

Chapter 1:
ENCASIA'S ORGANISATION

1.1) Significant changes

ENCASIA Secretary (SIA-Sec)

Ms. Simona Wist (Romania) replaced Mr. Brian McDermid (UK) who was standing down, as the SIA-Sec. Ms. Wist has been active in ENCASIA on a number of subjects, particularly with WG 1 – Communication.

Working Group 6: Safety Recommendations

During 2019, Mr. Phil Sleight (the UK) stood down as Chairman of WG 6 and his successor is now Mr. Vittorio Borsi (Italy). Mr. Sleight remains a member of this working group.

1.2) EC grants

Table 1 summarises the status of the European Commission grants, which are related to the ENCASIA work programme.

Year	Name	Grant actions	EC grant	Co-financing rate	Status
2012	ENCASIA 1	Two training sessions carried out in the UK and FR during 2013.	€98,630	95% (EC) 5% (UK and FR)	Closed 2014
2013	ENCASIA 2	Training for Peer Reviews (UK) and mutual assistance (DE) in 2014. Peer review of four SIAs in 2014.	€99,932	100% (EC)	Closed 2015
2014	ENCASIA 3	Training for Peer Reviews (PT) in 2015. Peer review of six SIAs in 2015.	€79,947	95% (EC) 5% (ENCASIA)	Closed 2016
2015	ENCASIA 4-5		€159,942	95% (EC) 5% (ENCASIA)	Closed 2018
2016		Training for Peer Reviews (AT) in 2016. Peer review of six SIAs in 2016.			50% of grant received and actions completed for 2016.
2017		Training on mutual support and preparation for Peer Reviews (CZ) in 2017. Peer review of six SIAs in 2017.			30% of the grant received as a 2nd instalment and all actions completed for 2017.

Year	Name	Grant actions	EC grant	Co-financing rate	Status
					Additional payment of the grant (10%) requested to pay for the actions in 2017.
2018	ENCASIA 6-7	Mutual Support training in 2018. Peer review of eight SIAs in 2018.	€160,000	95% (EC) 5% (ENCASIA)	Contract signed 29 Dec 2017. This grant covers a period of 30 months from 01 January 2018 to 30 June 2020. First instalment of €80,000 received in January 2018. Second instalment of €48,000 received in December 2018.
2019		EMSS desktop exercises in 2019. SRIS, Peer Review and EMSS workshops in 2019.			

Table 1. Status of the grants from the European Commission

1.3) Outreach activities

In 2019, ENCASIA members were directly or indirectly involved in several ENCASIA outreach activities when interacting with a number of institutions. This also involved mentioning ENCASIA in other transport modes as several SIAs are multi-modal authorities.

40th Session of the ICAO General Assembly

In 2019, ENCASIA members were involved in the preparation of a European Working Paper (WP) for the 40th session of the ICAO Assembly (24 September – 4 October 2019). This paper was entitled: "Resilience to a Major Accident – Cooperation, Mutual Support and Regional Accident and Investigation Organisations (RAIOs)". Before the Assembly, Australia and New-Zealand had indicated their desire to co-sponsor that paper. During the Assembly, the paper was presented by an ENCASIA Member and has gained strong support.

The European WP encourages cooperation and mutual support between States while recognizing that the current ICAO guidance (Doc 9946, Manual on Regional Accident and Incident Investigation Organization) on RAIOs is limited. Moreover, there is currently only one organisation known to fully meet the guidance. It is the Interstate

Aviation Committee (IAC or MAK), which was set up prior to the ICAO guidance on RAIOs. The paper also states that cooperation is key to fulfil the international obligation to conduct effective and independent accident investigations to enhance aviation safety. It also underlines the national accountabilities in the event of a major accident crisis.

The European WP notably directed ICAO to recognize the recent initiatives related to regional cooperation (in particular the ENCASIA experience) and to review the Doc 9946 to enrich it with the different concepts of Regional Accident Investigation (RAI) mechanisms. This approach should encourage more Contracting States to seek to cooperate in a pragmatic manner that suits their geographical, cultural, political and/or legal environment.

Collaboration with other RAIOs

Many States have set up cooperative initiatives. In particular, ENCASIA has reinforced its bounds with the safety investigation authorities of South America that cooperate through the Accident Investigation Regional Cooperation Mechanism (ARCM) of South America. ENCASIA was invited to be incorporated as an ARCM member with a status of special observer. Likewise, the ARCM has been invited by the ENCASIA chair to participate as an observer to a plenary meeting.

RASG-EUR AIG and ECCAIRS User Workshop

The ENCASIA Deputy Chairman delivered a PowerPoint presentation on the role and objectives of ENCASIA at the RASG-EUR AIG and ECCAIRS User Workshop, which was held in Paris from 8 to 10 April 2019. Several States from the EUR-NAT region were present as well as international organisations such as the IAC. This workshop generated valuable discussions regarding the setup of ENCASIA and the structure of IAC, especially when addressing the benefits and challenges of regional cooperation.

Usage of ENCASIA documentation in other modes

Railways. In Europe, the National Investigation Bodies (NIBs) have set up a group that has been largely inspired by the ENCASIA system. The handbook was essentially just adapted to the NIBs legal requirements and particulars. Similarly, the ENCASIA questionnaire for peer reviews was also essentially adopted, although duly adapted to the NIB processes and requirements. This process was tested and fine-tuned in a pilot programme, which has involved the performance of six peer-reviews to NIBs during 2018 and 019. This similar initiative in railways will endeavour to update to the questionnaire so that we can also cover the topic of how safety culture is investigated by NIBs and how it is implemented within the NIBs themselves.

Maritime. In the maritime mode, there is the example of a marine casualty that has prompted the multi-modal Luxembourg SIA to use the ENCASIA short procedure on

'managing media communication after an accident' as guidance to prepare an initial press release. It shows that the efforts of ENCASIA to provide guidance material for safety investigations in the civil aviation sector can also be beneficial across other transport modes, especially in multi-modal organizations where the supporting documents are known and readily available.

Common ENCASIA table for ICAO's EFOD

Update on Electronic Filing of Differences (EFOD). In 2019, ENCASIA finalized the development of the standard table for the Electronic Filing of Differences between ICAO Annex 13 and Regulation (EU) No 996/2010. This document aims to help SIAs to fill in the online ICAO EFOD database and to determine which items would be best addressed by national law, policies or procedures.

Chapter 2:
CANDIDATES FOR OBSERVER STATUS

2.1) General

Guidance criteria for the assessment of candidate states seeking Observer Status at ENCASIA was developed during 2019 and approved, following circulation to ENCASIA Member States, by the Chairman of ENCASIA during the September 2019 Plenary meeting. A Sub-Committee on Observer Candidate States has been set up, made up of representatives from three ENCASIA State SIA's namely, Ireland (Chair, deputy Chair of ENCAISA), Cyprus (Member) and the Netherlands (Member).

2.2) Observer Status Applications

Following a formal application by the Swiss Transport Safety Board (STSB) for Observer Status at ENCASIA, the Chairman of ENCASIA, tasked the Sub-Committee on Observer Candidate States, to commence formal assessment of the STSB as per the guidance criteria.

Criteria (1) - Meeting the objectives of Regulation (EU) No 996/2010, requires that the applicant State SIA is Peer Reviewed. In that regard, this particular Peer Review was conducted at the STSB in November 2019 and the associated Final Report was furnished to the Sub-Committee on Observer Candidate States for consideration in December 2019.

With regard to *Criteria (2) - Third Country Agreements/EU Aviation Safety Regulations* and *Criteria (3) - Active Participation at meetings and activities of the Network and other entities engaged in the air accident investigation process*, the Sub-Committee on Observer Candidate States is engaging directly with the STSB and it is planned that a Report by the Chair of the Sub-Committee on Observer Candidate States on the assessment of the STSB will be delivered to the Chairman of ENCASIA by the Plenary meeting scheduled for February 2020.

Chapter 3:
EASA PARTICIPATION IN SAFETY INVESTIGATIONS UNDER REGULATION (EU) NO 996/2010

A letter sent in January 2019 by the Director of Aviation – EC to all Heads of EU Safety Investigation Authorities regarding concerns raised by EASA relating to their participation during some major investigations led to a discussion of this issue at the 18th ENCASIA Plenary meeting.

The letter considered that the objective of improving aviation safety and in particular in the area of aircraft design, would benefit from a closer involvement of the Agency, under the provision set forth in Regulation (EU) No 996/2010. It stated that the role that EU law grants to EASA in relation to functions and tasks of state of design, manufacture and registry has not been fully reflected in the conduct of some safety investigations, without providing information on cases which would support the statement.

Following the initial discussions at the Plenary Meeting, a meeting took place between the Chairman of ENCASIA and the Executive Director of EASA which resulted in a Terms of Reference to establish a working group to address the issues raised by the EC regarding the EASA participation in safety investigations.

This small working group would identify the best way forward in order to arrive to a complementary and fruitful cooperation between EASA and SIAs. The output of such a group should deal with best practices and guidelines for EASA participation in the safety investigation, and the exchange of information from EASA to investigations and from investigations to EASA.

Participants of this ENCASIA-EASA WG were representatives from France, Germany, Italy, Norway, Sweden, the UK and EASA.

Based on the Terms of Reference and within the limits of the role given to EASA in safety investigations by the articles of Regulation (EU) No 996/2010, the scope of the working group includes the following areas:

- Notifying EASA of occurrences of interest to EASA;
- Informing EASA of on-site activities and off-site activities, such as examination and testing which may be of interest to EASA, and the process for agreeing on EASA participation;
- Clarifying how EASA will get access to the information needed to fulfil its continued airworthiness duties;
- Clarifying how EASA will interact with an investigation where multiple Member States SIAs are involved;

- Clarifying how EASA will supply SIAs with requested information, advisers and equipment in investigations available at EASA and agreeing on the involvement of EASA specialists and
- Consulting EASA on draft reports and documenting the processing of the comments received.

The ENCASIA-EASA WG had two face-to-face meetings in 2019 and presented the progress to the 19th ENCASIA Plenary meeting.

After further fruitful discussions and developing best practices the ENCASIA-EASA WG will present the outcomes to the 20th ENCASIA Plenary meeting. Finally, the WG will draft a final report

Chapter 4:
ECCAIRS 2.0 AND SRIS 2.0

Regulation (EU) No 996/2010 (Article 18) 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 EC in 2017 that support of the ECR will transfer from the DG-JRC (Joint Research Centre) to EASA.

The new ECR supporting software, ECCAIRS 2.0, which is referred to as E2, is based on modern IT technologies and should allow a more efficient central 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.

The E2 project[1], completed Phase II in the fall of 2018. This phase was dedicated to the Technical Analysis and the Design of the Solution Architecture of E2, it was based on the input received from the Key user group (KUG)[2] during the workshops which lead to the Functional Specifications document made in Phase I.

Administrative issues prevented EASA to proceed with Phase III until the third quarter 2019, when a Framework Contract (FWC) with an IT service provider was finalized.

In July 2019, the administrative Kick-Off of the Framework contract was organised and were defined the functional deliverables which resulted from Phase I (Functional specification) and Phase II (Detailed technical analysis and architecture) of the project.

During the ECCAIRS Steering Board and ECCAIRS Steering Committee meetings, held on 12-23 December 2019, the project status has been updated with the latest timeline, actions, deliverables, (key)user involvement etc.

The target is to reach a Minimum Viable Product (MVP = all the core functionalities to run ECCAIRS like today) by June 2020 for E2-ADREP (related to the ADREP taxonomy used by the occurrence reporting system) and by Sept 2020 for E2-SRIS. MVP milestones will trigger the data migration and training related activities. The KUG will soon be reactivated in order to begin the testing and validation process, while the training for local administrators and end-users is currently planned for the second/third

[1] ECCAIRS 2.0 was being developed in these phases:
Phase I – Functional specification
Phase II – Detailed technical analysis and architecture
Phase III – Development
Phase IV – User acceptance testing
Phase V – Data migration

[2] ENCASIA is active in the Key user group (KUG) and has assisted in the defining of 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

quarter 2020. The training material will be tested by EASA and the KUG, classroom training will be delivered to administrators in order to set-up all roles and permissions, while e-Learning training (walkme-like) in a specific training environment is foreseen for authorities' end-users. Since it has been emphasized that ECCAIRS software is also used by some SIAs to manage their own investigated events database, each authority (SIA and NAA) will be requested to nominate Local Project Managers for the E2.

In alignment with DG MOVE, the continued operations of the current ECCAIRS 1 by JRC and the minimal product support has been secured (bug fixing only, no development of features) until the end of 2020.

The review of the current/in-place EU-ICAO Working Arrangement is ongoing and lead by DG MOVE with support of EASA. It should provide a basis for an overall agreement on the E2 solution approach for installations external to EASA Member States.

ENCASIA WG 6 is 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 in order to assist in a smooth transition to the new system.

As far as SRIS is concerned, all current capabilities will be available in E2 and new functionalities will be added so that SIAs will have their own SR area where draft versions of safety recommendations may be processed, after which they will be shared to ECR-SRIS when finalized. SIAs will then have the possibility to trigger the publication of the SRs and their responses on the public portal either automatically or manually. It may also be possible to use tools within SRIS to facilitate consultation between the SIA and SR addressee.

Chapter 5:
EVALUATION OF REGULATION (EU) No 996/2010

ENCASIA played an active role in supporting the European Commission's evaluation of Regulation (EU) No 996/2010. The Commission Staff Working Document SWD (2019) 177 and its executive summary SWD (2019) 178 were published in July 2019 and sent to ENCASIA members and observers.

The document acknowledges the important role that ENCASIA is playing. In particular, the close cooperation between the safety investigation authorities (SIAs) in the framework of ENCASIA has allowed most Member States to be better prepared for handling investigations of aircraft accidents and incidents. The objectives of Regulation (EU) No 996/2010 continue to be relevant in achieving the ultimate goals of appropriate and timely reactions to major civil aviation accidents and the overall improvement of aviation safety.

ENCASIA will work with the European Commission in addressing the aspects related to the Network.

Chapter 6:
EX-POST EVALUATION OF REGULATION (EU) No 376/2014

The European Commission is conducting an evaluation of Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences. The evaluation started in Q4 2019 and it will conclude in Q4 2020.

Regulation (EU) No 376/2014 also aims to prevent aircraft accidents and related fatalities through feedback and lessons learned from occurrences, including accidents, and other safety-related information such as safety recommendations issued by SIAs. As such, ENCASIA and its members have been an important contributor to this evaluation. It is expected that the Network will issue an Opinion in Q1 2020.

Chapter 7:
ENCASIA'S WORK PROGRAMME

7.1) Working Group 1: Communication

WG1 maintained updated contact lists that could be used to support mutual support activities and continued to update and improve the ENCASIA public and restricted (Drupal) websites, both of which are accessible through the EC website www.ec.europa.eu/transport/modes/air/encasia or www.encasia.eu.

The restricted website (Drupal) will be further developed to contain a comprehensive repository of investigation tools, processes, and examples of Best Practice and reports that will be readily available to SIAs.

As part of the ENCASIA communication strategy, WG 1 focused in 2018 on developing a regular newsletter that would be available to the public through the ENCASIA website. The newsletter would not replicate investigation reports but instead concentrate on the capability and development of air safety investigation and cooperation between ENCASIA members. The intention was to invite each ENCASIA member to prepare a newsletter and, when sufficient material would be available, to start publication during 2019.

Due to the limited resource for this activity, it was decided at the 18th Plenary meeting in February 2019 that the publication of the newsletter would be suspended while WG 1 would look at the feasibility of publishing the information on the ENCASIA website and/or the Annual Report.

7.2) Working Group 2: Cooperation

During the year, WG 2 published several documents that were uploaded onto the ENCASIA Inventory of Best Practice, held on the ENCASIA restricted website (called Drupal). The documents are made available through an index to facilitate access to best/good practices. WG 2 published two papers, titled "Procedures for the decision to translate SIA documents into English" and "Response to initial notification about an occurrence".

In coordination with WG 3, WG 2 also published four short procedures titled "Confidentiality", "Hazard and risk assessment", "Template for risk assessment" and "Template for badges". Some of the procedures that were developed for the ENCASIA Mutual Support System were used/tested during table top exercises.

WG 2 kept on working on improving best practices documentation visibility by presenting a document during a Plenary meeting, updating the best practices index and facilitating access to best practices held on the ENCASIA restricted website.

WG 2 drafted two documents: the first about handling, coordinating and sharing data and the second on how to draft the final report.

During 2020, WG 2 will focus on finalizing, publishing the draft documents, will continue working on other subjects like analytical methodologies, when to investigate drone accidents, checklist for major occurrences, and will develop procedures to help implement, when needed, the outcomes of the WG on EASA participation in safety investigations.

7.3) Working Group 3: ENCASIA Mutual Support System

WG 3 has continued to develop the concept of the ENCASIA Mutual Support System (EMSS), which is intended to help SIAs with limited resources or experience to investigate a major complex aircraft accident. EMSS is a voluntary process that helps SIAs identify their capability gaps and to develop contingency plans and prior arrangements with other SIAs.

During 2019, WG 3 organised and ran two desktop exercises in TAIIB (Latvia) from 26 to 28 March and GPIAAF (Portugal) from 2 to 4 April. The aim of the exercises was to allow these SIAs to exercise their National Investigation Management Plan (NIMP) and to gain experience in working with an Assisting SIA. The Assisting SIAs who helped these SIAs to develop their plans were the BEA (France) and AAIB (UK). As part of a contribution to the co-financing arrangements with the EC to support the exercises, the Assisting SIAs used their own budgets to send investigators, prior to the exercises, to assist with the development of the NIMPs. The exercise in Latvia was supported by 16 investigators from 10 SIAs and EASA, and in Portugal by 15 investigators from 11 SIAs. A number of representatives from the respective governments and other national agencies also took part in the exercises.

A further desktop exercise is planned to take place at the ANSV (Italy) during the first part of 2020 with a focus on judicial aspects and the timely release of information.

A one-and-a-half-day workshop was carried out, in conjunction with WG 5 (Peer Reviews), in Warsaw on the 23 and 24 September to review the progress of EMSS. It was agreed that the first stage of development of EMSS had provided a sound basis for the mutual support of ENCASIA members. The workshop identified a number of initiatives to improve the capability of EMSS which will be further studied during 2020.

7.4) Working Group 4: Planning and Resources

WG4 mainly dealt with logistical support of ENCASIA activities during 2019.

The tasks of WG4 included:

- determining the best suitable way to organize and finance the events decided in the ENCASIA work programme;
- finding contractors to provide the services needed for the implementation of the events;
- advertising the events across the ENCASIA community to ensure a broad participation;
- serving as point of contact between the ENCASIA participants/hosts and the contractors for the event;
- monitoring the cash flow between ENCASIA a.s.b.l. and the contractors to ensure conformity with the provisions of the grant.

ENCASIA activities supported by WG4:

- **EMSS exercises**

WG4 issued a call for tender to organize the EMSS exercises in Latvia (26 to 28 March 2019) and Portugal (2 to 4 April 2019). Travel arrangements and the provision of daily allowances for ENCASIA participants were subcontracted to a company called B&S Europe. WG4 coordinated the EMSS exercises in close cooperation with WG3 and made sure that the costs of travel and related subsistence allowances were in line with the EU practices on travel.

- **Workshop/plenary meeting in Poland**

A Workshop was held in conjunction with the plenary meeting at the kind invitation of the Polish authorities in Warsaw from 24 to 26 September 2019. WG4 and the Polish Safety Investigation Commission initially reviewed a number of venues in Warsaw to obtain the best value for money as well as prices compatible with the European per-diems for Poland.

It was finally decided to task a specialized company (Conference Direct) with the conduct of a comparative study of possible options for hosting that event. On the basis of a consolidated report offering several proposals, WG4 opted for the Novotel Warszawa Airport, which had the best quality/price ratio and the advantage of being close to the airport, while offering a free airport shuttle.

- **Other activities involving WG4**

Audit. When organising events and selecting venues, it is key to ensure that costs incurred are reasonable, justified and comply with the principle of sound financial management, in particular regarding economy and efficiency. EC audits are therefore commissioned on a regular basis to ensure proper use of Commission grants.

WG4 was involved in an audit conducted by the European Commission in June 2019. The audit covered all the closed ENCASIA grants since 2012. The associated questionnaire was not always best tailored to ENCASIA as a multi-national non-profit organisation, but was more designed for a commercial entity. That implied extensive researches to provide documentation and justification for decisions sometimes made a long time ago, with an impact on finance. WG4 had notably to provide information regarding the selection of contractors.

Based on the recommendations from the audit, WG4 has decided to centralize all documentation and communication related to a grant, in order to facilitate the reviews that will have to be carried out during future EC audits. This process is time-consuming but important in the perspective of future EC grants. Furthermore, WG4 will revise the tender specifications to make the process more efficient and transparent.

7.5) Working Group 5: Peer Reviews

After completion of the Peer Reviews Phase 1 with all 28 member states and 2 observer states and as agreed by the ENCASIA members of the 18th plenary meeting, WG 5 focused on drafting the Peer Review Final Report Phase 1 (2014-2018), the classification of the SIAs, and developing the concept of Peer Review Phase 2 in 2019.

Following the feedback received from the Peer Review and EMSS Workshop held in Warsaw (Poland) on 24-25 September 2019, WG 5 discussed and developed the concept of the Peer Review Final Report Phase 1. The report reflects the situation of the SIAs at the time they have been peer reviewed and it is based on the data collected at that time. A draft version of the Peer Review Report Phase 1 was presented to the ENCASIA Plenary meeting on 12-13 February 2020.

In general, the intention of the Peer Review Final Report Phase 1 was an anonymized compilation of the statistical data and the outcomes of the Peer Reviews. The conclusions are based on the completed questionnaires, the on-site visits by the Peer Review panels, the Peer Review reports and the assessments of the WG 5. Finally, the report focused on good practices for improvements of SIAs and help to guide ENCASIA as it moves forward and to inform Phase 2 of the peer review programme.

As decided by ENCASIA members at the 18th plenary meeting WG 5 assessed the Final Reports of the reviewed SIAs including the completed questionnaires for a classification of the SIAs in one of the 4 categories set to determine the need of

assistance or the capability to assist a State in case of a major accident. It was agreed to discuss the WG5 proposals of the classifications of the SIAs with the head of each SIA before finalising the categorisation.

Based on the analysis of the 30 Peer Review reports, ENCASIA WG5 developed the following four categories of SIAs related to the management of a major, or complex, aircraft accident investigation:

> **Category 1** is a SIA which has the experience and resources to conduct and manage a major safety investigation in a timely manner without mutual assistance.
>
> **Category 2** is a SIA which has the experience, resources and a National Investigation Management Plan (NIMP) or similar to conduct and manage a major safety investigation in a timely manner, but may require some assistance from other SIAs.
>
> **Category 3** is a SIA which does not have the experience and/or the resources to conduct and manage a major safety investigation on its own but is developing their National Investigation Management Plan (NIMP) or similar based on the concept of ENCASIA Mutual Support system (EMSS).
>
> **Category 4** is a SIA which does not have the experience and resources to conduct and manage a major safety investigation on its own and is not currently developing a National Investigation Management Plan (NIMP) or similar.

WG 5 is currently working on the concept of the second phase of the Peer Review and the aspects regarding the challenges associated to a major investigation to be covered in Peer Review Phase 2.

The proposal of the Peer Review Phase 2 was presented to the ENCASIA Plenary meeting on 12-13 February 2020.

ENCASIA has been asked to conduct or assist a Peer Review based on the ENCASIA Peer Review concept and questionnaire by Switzerland (in the perspective of Switzerland application to join ENCASIA as observer) and Nigeria. Both Peer Reviews are completed.

7.6) Working Group 6: Safety Recommendations

Overview

The group is composed by SIAs representatives from France, Germany, Ireland, Italy, Romania, Slovenia, Sweden and the UK. EASA and the EC are also members. This group is currently chaired by a representative of the Italian safety investigation authority (ANSV).

The working group objectives are:

- To provide assistance to ENCASIA in order to achieve an effective management of SRIS, to ensure compliance with the current EU Regulation framework;
- To provide guidance on best practice for the development and processing of safety recommendations and
- To provide the views and opinions of ENCASIA on developments in occurrence reporting which directly relate to accident and serious incident investigation under Regulation (EU) No 996/2010.

WG 6 continued to support other organisations with the development of the European Safety Recommendation Information System (SRIS) and the European Central Repository (ECR) databases. Its members are quite active and participate in the ECCAIRS Steering Board, Steering Committee, EASA Network of Analysts (NoA) and E2 KUG.

Furthermore, WG 6 focus has been oriented toward following areas:

Public SRIS

Following the ENCASIA Opinion in 2017 on expanding Public SRIS to include responses to safety recommendations, the EC issued the Commission implementing Decision (EU) 2019/1128 of 1 July 2019 "on access rights to safety recommendations and responses stored in the European Central Repository and repealing Decision 2012/780/EU".

This decision laid down the measures concerning the management of the European Central Repository set up in accordance with Article 8(1) of Regulation (EU) No 376/2014 as regards the access to safety recommendations within the meaning of Article 2(15) of Regulation (EU) No 996/2010 and to responses thereto recorded under Article 18(3) of that Regulation.

Article 2 of this Commission implementing decision states that "All safety recommendations and their responses contained in the European Central Repository shall be made available to the general public through a public website which shall be established and managed by the Commission".[3]

Articles 3 and 4 of aforementioned implementing decision laid down the requirement for the protection of personal data and confidentiality of information. ENCASIA WG 6 drafted a document concerning the "Guidance on preparing response text for entry into the Safety Recommendation Information System (SRIS) for public use" which was endorsed at the ENCASIA Plenary meeting on 26 September 2019. The group also issued templates of the "letter of transmittal of safety recommendations" and "letter

[3] Since 2013, Public SRIS website can be accessed through the link: http://sris.jrc.ec.europa.eu/sris/public/default.aspx.

of SR response assessment" in order to facilitate and standardize SIAs processing of safety recommendation in light of their public accessibility.

Currently, all safety recommendations contained in the European Central Repository and the responses received after the entry into force of the Commission implementing decision (21 July 2019) are visible on the public SRIS portal. As of 31 December 2019, 45 responses to safety recommendations have been made available to the public through SRIS.

Training/workshop

A training/workshop for SIAs and National Aviation Authorities on safety recommendations took place on 25 and 26 February 2019, hosted by EASA at their headquarters in Cologne.

The aim of the workshop was to provide guidance for SIAs on working with addressees, while maintaining the independence of the SIA and to further develop guidance material for SIAs and NAAs for handling safety recommendations, responses and actions. More than 30 representatives of SIAs and NAAs participated actively to the activities coordinated by the WG 6 members.

The feedback received by the participants has been considered very positively and showed the main areas of interest.

In general:

- Addressees want to be involved early in the drafting of Safety Recommendations;
- Addressees wish to continue dialogue after the Safety Recommendation is issued to understand intentions and the safety issues;
- A common language in Safety Recommendations is important in order to understand if some area of concern has been already considered by other SIAs.

Due to the positive feedback received, the working group is planning a new training/workshop in spring 2021 with industry participation.

Quality checks

A system of quality checks of the SRIS is in place, with individual members of WG 6 nominated to provide support and guidance to a group of member states on improving the quality of the data in their safety recommendations on SRIS.

This system is currently under review of WG 6 in order to enhance the exchange of information between the SIAs and the working group. Furthermore, a quality check guideline will be developed to better streamline quality control processes to the needs of smaller SIAs.

Chapter 8:
DATA ANALYSIS OF THE SAFETY RECOMMENDATIONS INFORMATION SYSTEM

ENCASIA is required by Regulation (EU) No 996/2010, Article 7.3(g), to analyse 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 2019, the analysis of the data was carried out by WG6 on data available on SRIS up to 29 November 2019.

8.1) SRIS overview

As of 31 December 2019, 3,428 safety recommendations had been recorded on SRIS, of which 140 were issued in 2019.

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 (orange) and the SRs recorded on SRIS in 2019 (blue).

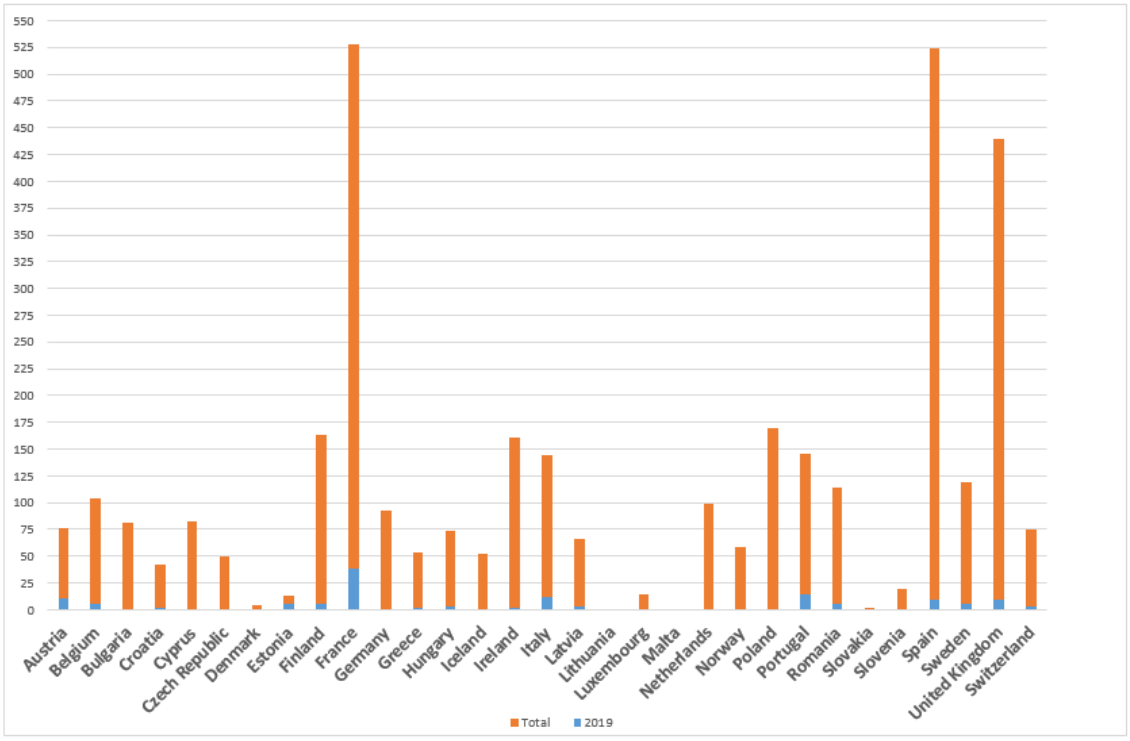

Chart 1. Summary of safety recommendations recorded on SRIS by State

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

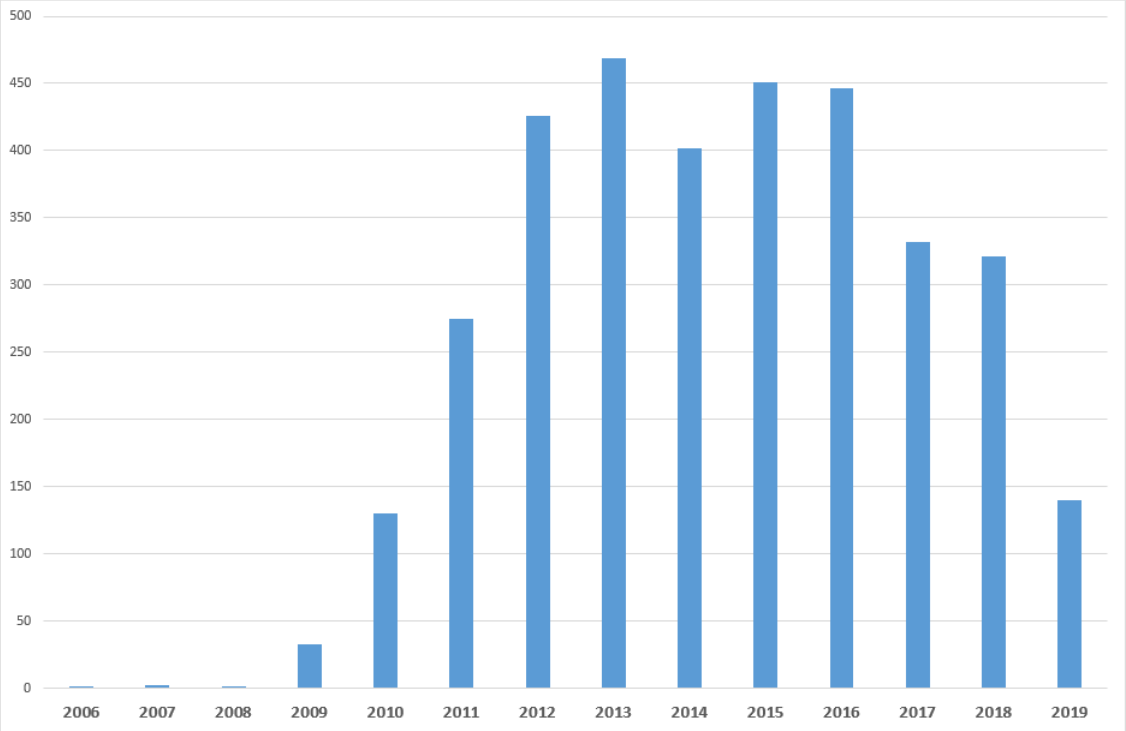

Chart 2. Number of safety recommendations recorded on SRIS by year

Although a systemic delay in the entry of SRs into SRIS by SIAs has been observed also in the past, which is normally fixed within the first months of the following year, it has been noted a significant reduction in the number of safety recommendations recorded on SRIS in 2019.

8.2) 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.

WG 6 is currently working on a matrix, including a list of examples, to facilitate and standardize SIAs in properly identifying SRURs and Safety Recommendations of Global Concern (SRGCs).

In 2019, there were 23 safety recommendations that were assessed as being a SRUR and covered the following safety issues, which are expanded in Appendix 3 on in the following sub-paragraphs:

- Aircraft fitted with Lycoming AEIO-540 engines equipped with Hartzell two-blade metal propellers;
- Limitations of conventional navigation aids in the recurrent training;
- Sailplane Pilot Licence;
- Maximum age of flight instructors in non-commercial aviation;
- Limitations on Trent 1000 G/01A engine;
- Propellers fitted on ATR 72;
- Initial certification of take-off performance;
- HEMS crew requirements;
- Parachutist activities;
- ATP integrated training schedule;
- Revision of the Airworthiness Directive 2005-0035;
- Certification Specifications for Aerodromes Design CS-ADR-DSN.

8.3) Safety Recommendations of Global Concern

The BEA (France) issued two Safety Recommendations of Global Concern related to the safety investigation opened for the accident occurred to the Pitts S2-B equipped with a Lycoming AEIO540 engine and Hartzell two-blade metal propeller, described in the previous paragraph:

- The FAA prohibit "unlimited" aerobatic maneuvers as defined by Lycoming Service Bulletin No 482 on airplanes equipped with the engines concerned by this SB and with Hartzell two-blade metal propellers.

  (Safety recommendation: FR.SIA-2019-0033)

- The FAA define appropriate oversight measures for airplanes equipped with the engines concerned by Lycoming Service Bulletin No 482 and Hartzell two-blade metal propellers and which carry out "unlimited" aerobatic maneuvers as defined by Lycoming Service Bulletin No 482.

  (Safety recommendation: FR.SIA-2019-0034)

The BEA as Accredited Representative of the State of manufacture issued the following Safety Recommendations of Global Concern related to safety investigation opened for accidents and serious incidents occurred in third countries:

1. A Safety Recommendation of Global Concern was issued to EASA to take without delay and in coordination with ATR, safety corrective measures for a Serious incident occurred to an ATR72 on take-off for a domestic flight to Leite Lopez Aerodrome (Brazil).

The CENIPA's intermediate report about two ISFD events to the ATR72-212A, equipped with PW-127M engines, underlined that, despite the maintenance carried out by the company in conformity with the manufacturer's specifications, the failures of the blades of the high pressure turbine stages were the cause of the total loss of power observed on each of the two engines equipping the aircraft and this, at an interval of only a few airplane operating hours.

At the beginning of the take-off run, the pilot felt a vibration in the aircraft as they continued to notice changes in the parameters of the engine 2 (Pratt & Whitney 127M). The pilots performed the rejected take-off procedures successfully, controlling the aircraft and stopping it on the runway. The TWR reported the presence of fire and the crew performed the engine shutdown and fire-fighting procedures.

The safety investigation conducted by the CENIPA detected that a failure occurred ten days before on the same aircraft during the initial climb to the engine 1 (Pratt & Whitney 127M).

On both engines' damages were found in the Low-Pressure Turbine and Power Turbine Disk 1 and 2, due to the fragments of the blades that came off the HP disk and to the other stationary components of the engines that were positioned after that disk.

The CENIPA issued in its intermediate report safety recommendations to EASA, Transport Canada Civil aviation and Pratt & Whithey.

The feedback from the PR-AQV along with the principle of replacements at the same soft time interval as set out in SIL PW100-183-R3 introduced to control this problem, suggest that the risk of a double engine failure during the same flight is increasing for certain ATR equipped with PW-127M engines and could reach an unacceptable level.

The consequences of a double engine failure in flight are potentially catastrophic, according to the flight regime and place where such an event occurs.

Consequently, the BEA recommended EASA, in coordination with ATR:

- To take without delay, the necessary measures to ensure that the risk of the failure of both engines on ATR planes, during the same flight, remains within acceptable limits for each aircraft affected by this problem. This may require prohibiting flights by ATR planes equipped with two engines subject to SIL PW100-183-R3 where the HP turbine blades which have logged more than 3,000 hours have not been replaced.

  (Safety recommendation: FR.SIA-2019-0032)

2. On 4th May 2014, an ATR 72-212A encountered severe vibrations on engine #2 propeller during descent into Piarco International Airport (Trinidad and Tobago) at a speed of 246 kt as the crew was moving power levers to the Flight Idle position, followed by a warning associated with the electronic propeller control (PEC) of the right propeller.

After the flight, it was found that the drive shaft of the right engine AC wild generator had ruptured and it was replaced. A maintenance team carried out tests on the two engine/propeller assemblies. No vibration or abnormal operation was revealed.

The flight the next day proceeded normally. During the landing run, the crew reported a loud vibration noise when they moved the power levers from the flight idle to ground idle position. Following this flight, various maintenance operations were undertaken.

Three ground tests of the engine/propeller assemblies were carried out and did not reveal any abnormal operation. A component of the right propeller pitch change mechanism (propeller valve module) was replaced. A fourth ground test was started, during which the power levers were moved to the reverse position. Vibrations appeared and the engines were immediately shut down. After the engine shutdown, blades 1, 2, 5 and 6 of the right propeller were in the feather position while blades 3 and 4 seemed to stay in the reverse position. The findings on the disassembly of the right propeller blades included the rupture of the blade 4 trunnion pin and damage to the propeller blade actuator yoke plate.

The circumstances and damage observed were similar to that which had been observed in an investigation into a serious incident on 18 September 2013 in Indonesia, involving an ATR 72-212A registered PK-WFV. An investigation was opened by the Indonesian investigation authority, the NTSC, who issued an immediate safety recommendation to the operator of the aircraft concerning the verification of the condition of the propeller blade trunnion pins and the search for crack indications on part of the fleet.

On 30 November 2014, a similar new incident occurred in Sweden to an ATR 72-212A registered SE-MDB, for which an investigation was opened by the Swedish

investigation authority, SHK. In total, seven cases of vibration phenomena on the ATR 72-212A have been reported in the last few years.

The investigation also revealed that the maintenance operations carried out on 9Y-TTC following the vibration phenomena did not identify this damage.

Consequently, the BEA recommended that:

- EASA ensure that ATR and UTAS continue to analyse the cyclic load phenomenon on the forward yoke plate revealed at flight idle and at a speed slightly above VMO in order to confirm that the ATR72-212A flight envelope provides sufficient margins to prevent this phenomenon from causing damage to the propeller pitch change mechanism.

  (Safety recommendation: FR.SIA-2019-0023)

8.4) 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 2019, as in previous years, were related to procedures or regulations. There has been a slight increase in the percentage of safety recommendations related to Aircraft/Equipment/Facilities which moved up to the second position in the percentage of SR topics shown below.

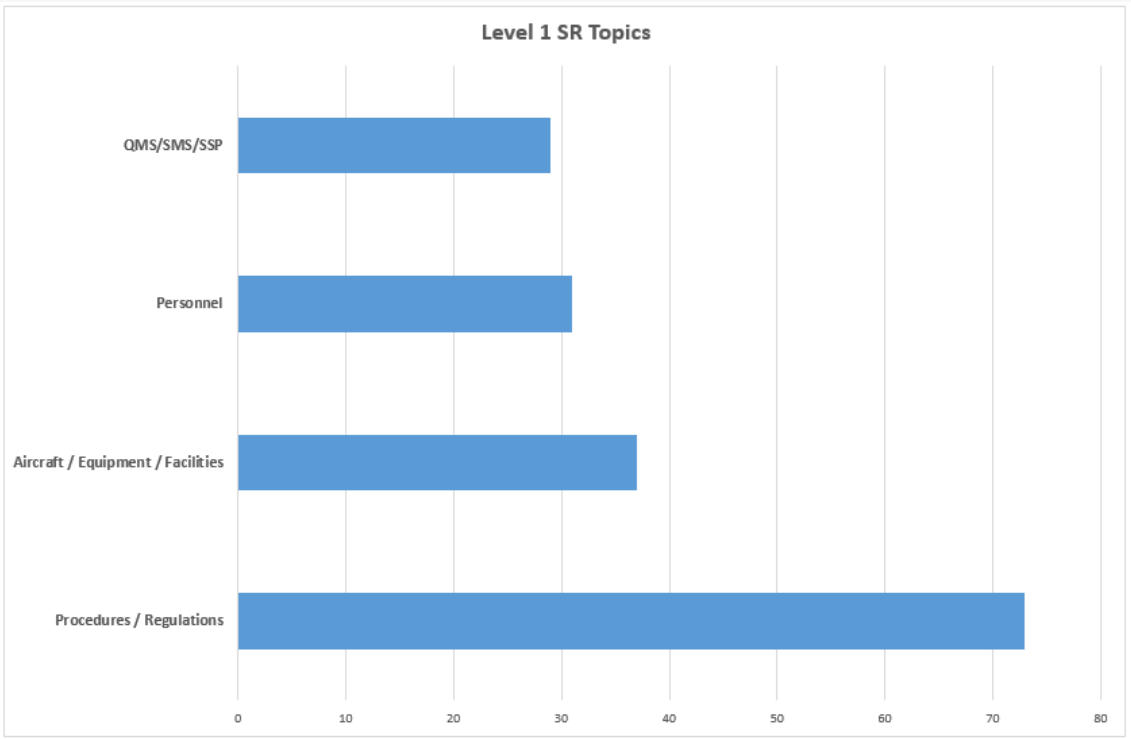

Chart 3. Level 1 safety recommendations' topics

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 and aircraft systems.

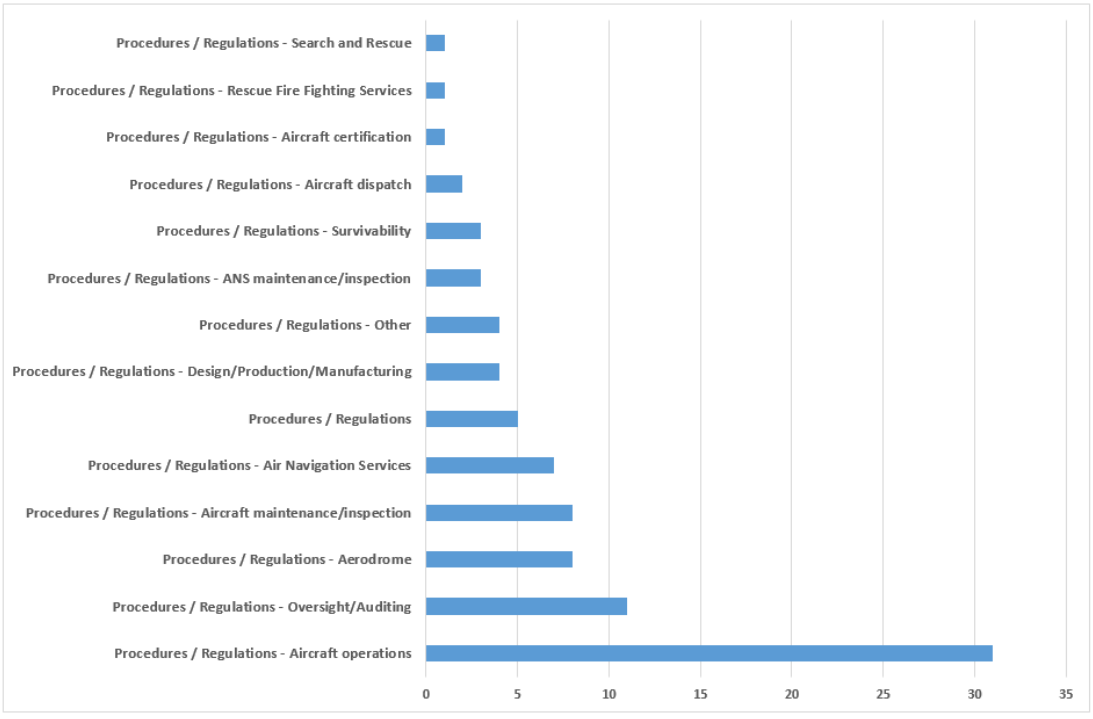

Chart 4. Level 2 safety recommendations' topics relating to Procedures and Regulations

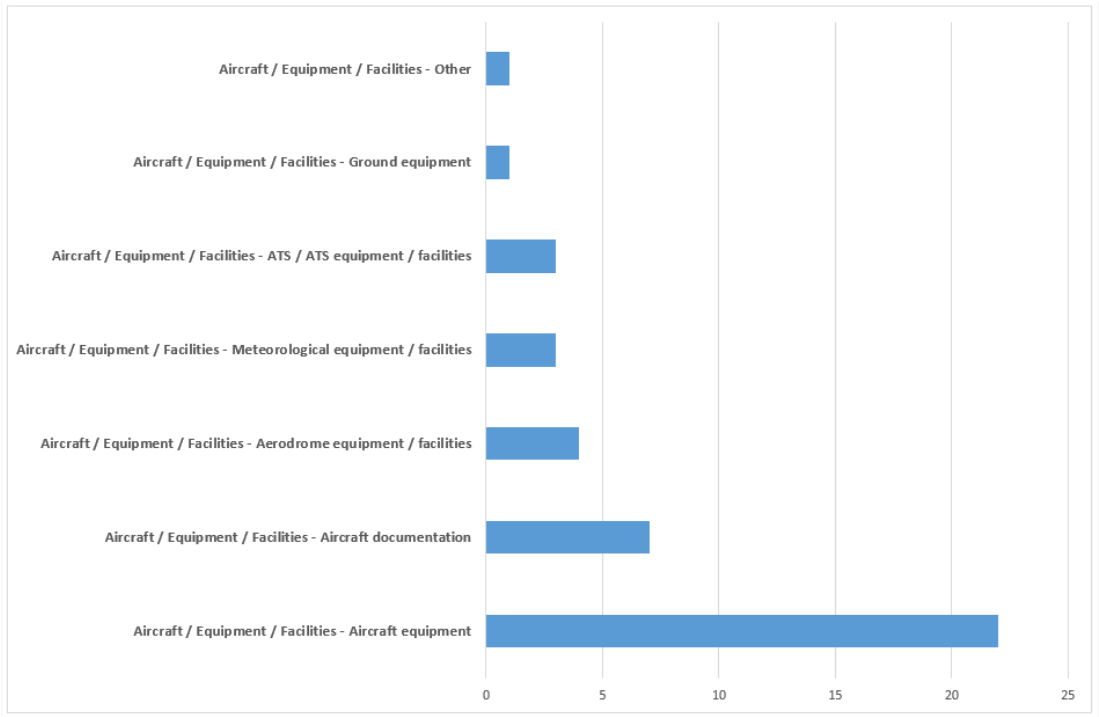

Chart 5. Level 2 safety recommendations' topics relating to aircraft/equipment/facilities

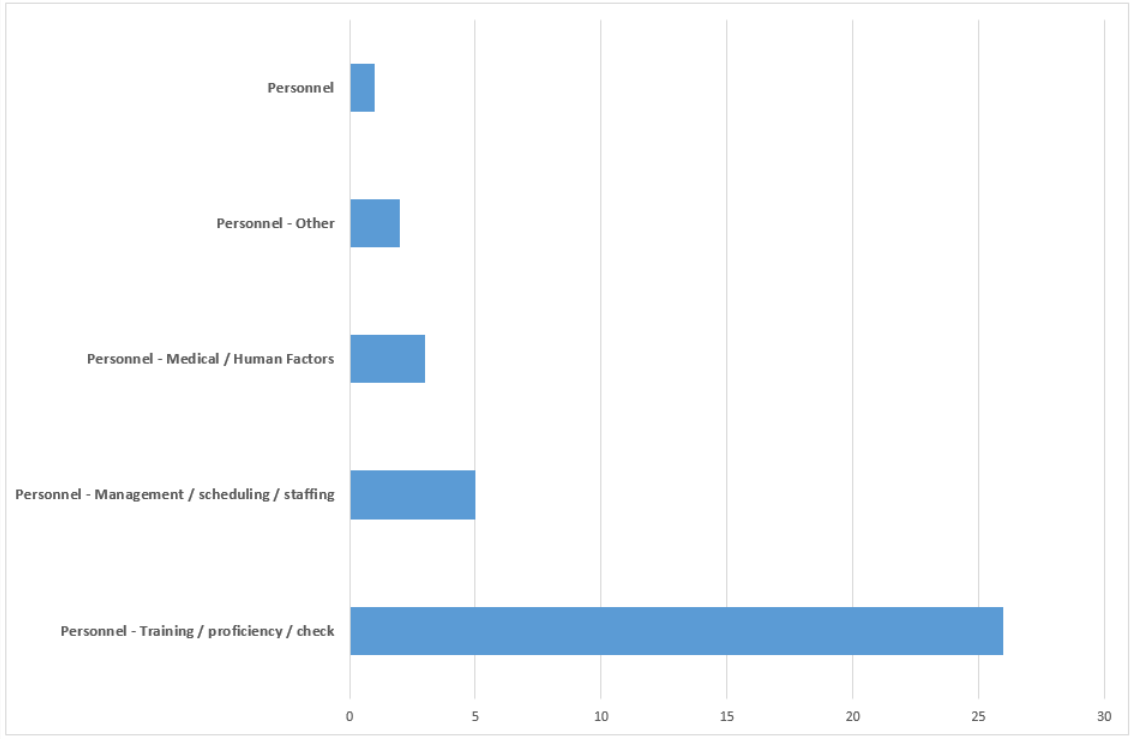

Chart 6. Level 2 safety recommendations' topics relating to Personnel

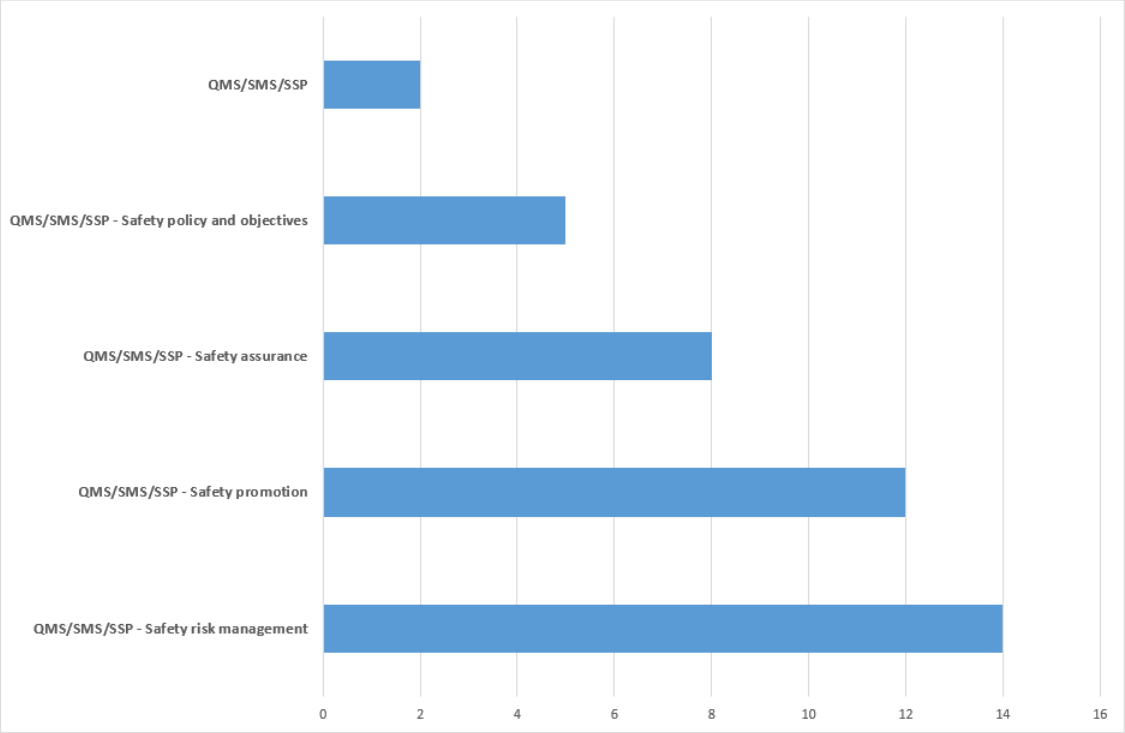

Chart 7. Level 2 safety recommendations' topics relating to QMS/SMS/SSP

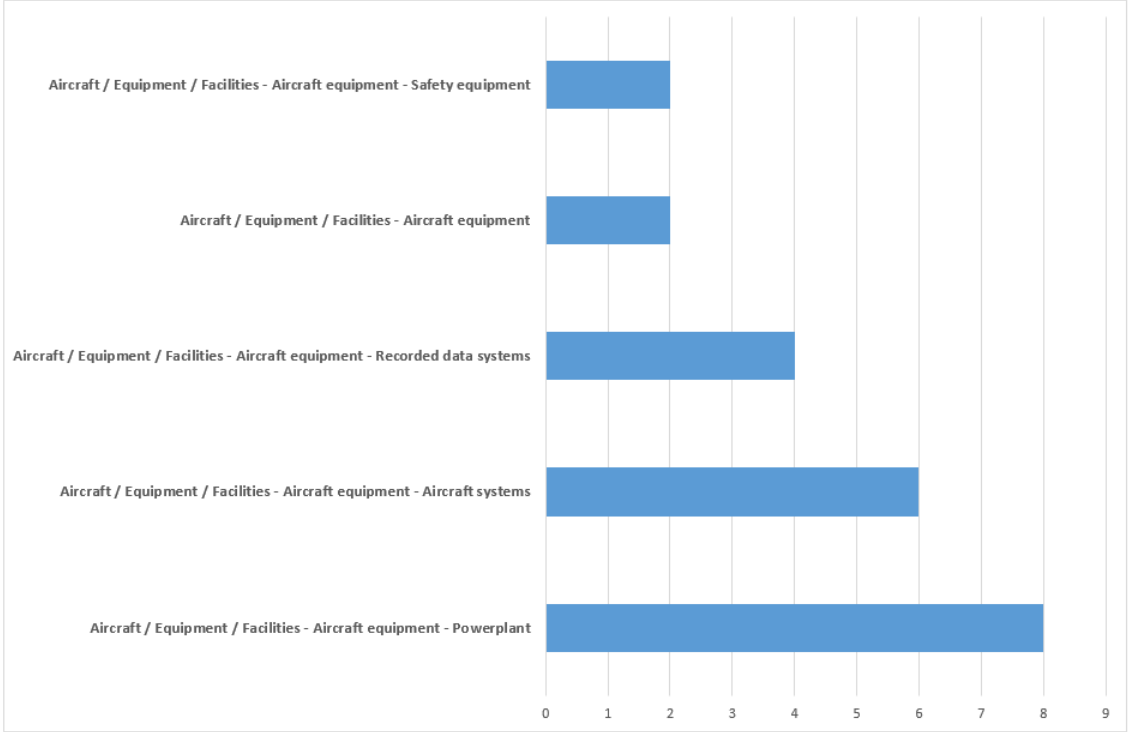

Chart 8. Level 3 safety recommendations' topics relating to aircraft systems

8.5) Safety Recommendations addressees

Most of the safety recommendations issued during 2019 were addressed to Civil National Aviation Authorities (NAA). The second most frequent addressee is EASA. Together, they cover 57% of the addressees of safety recommendations. The term "National Authority" is used to refer to authorities that are not involved in the regulation of Civil Aviation. They received the 8% of total number of SRs issued in 2019. The number of safety recommendations issued to Air Navigation Providers increased from 5 in 2018 (2% of total number of SRs) to 10 in 2019 (7% of total number of SRs).

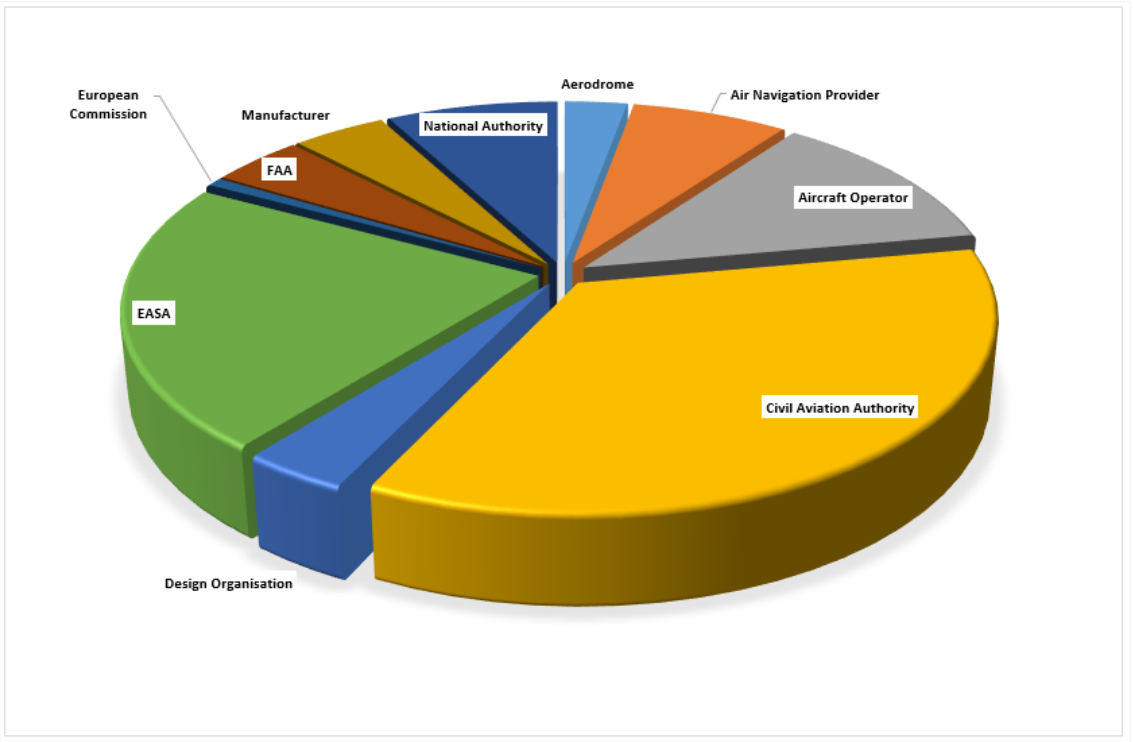

Chart 9. Addressees of safety recommendations issued in 2019

8.6) Safety Recommendations response assessment by SIA

Regulation (EU) No 996/2010 (Article 18) 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 139 safety recommendations issued in 2019, 61 (43%) are still awaiting a response. In 2018, such percentage was 67%. The effects of the Commission implementing decision of making the responses available to the general public,

together with the continuous effort of SIAs to have an effective dialog with addressees, should lead to a further reduction of un-responded safety recommendations.

A breakdown of the SIA's assessment of responses to safety recommendations issued during 2019 is summarised in Chart 10.

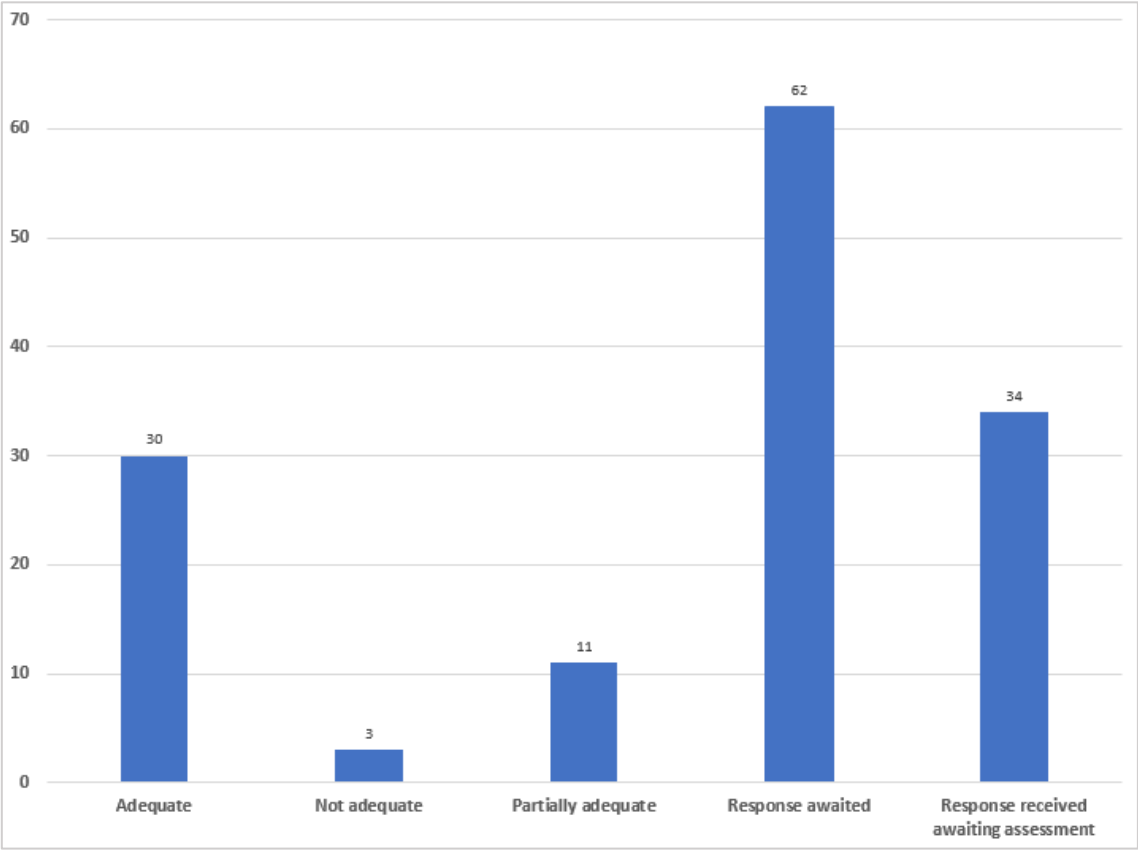

Chart 10. SIA's assessment of responses to safety recommendations issued in 2019

Chart 11 shows the current response assessments for previous years.

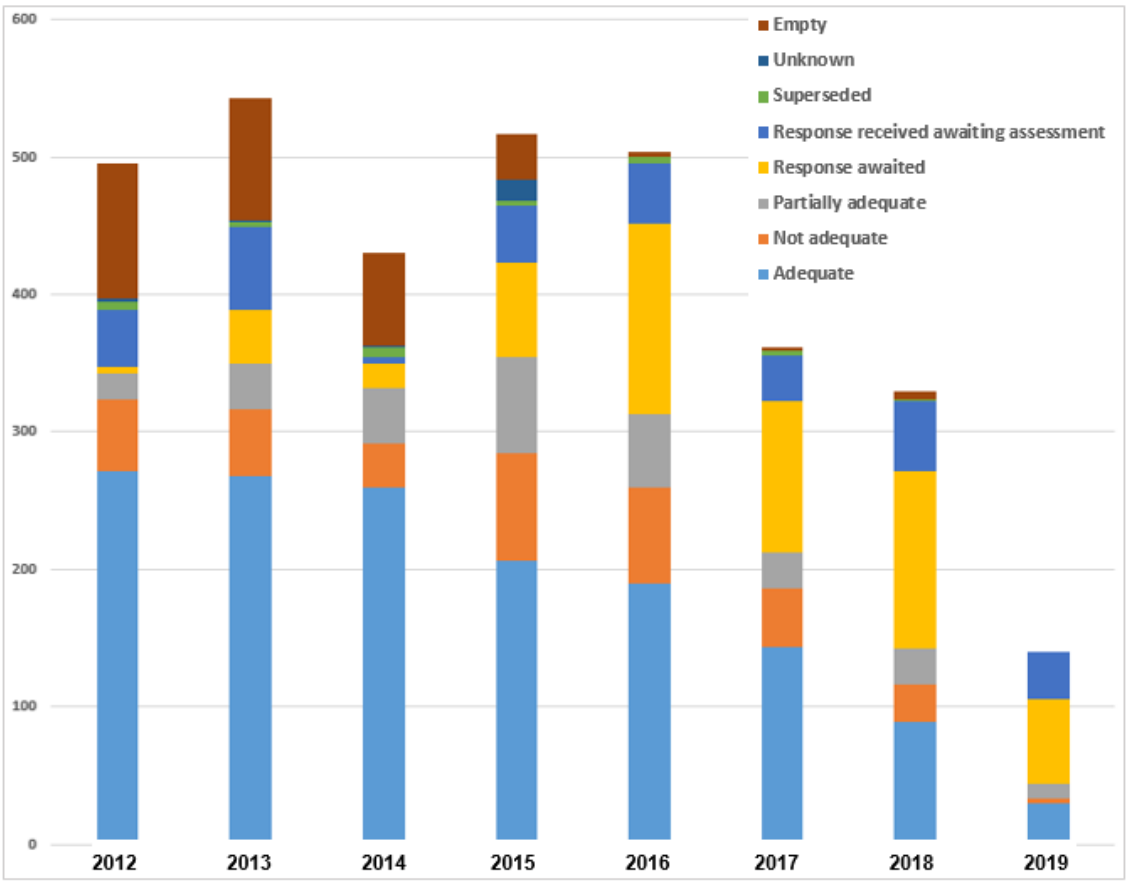

Chart 11. Response assessments for safety recommendations

Of note, is the significant percentage of responses in the status of "awaited" and "received, awaiting assessment". WG6 is continuously monitoring the situation and working with the relevant states to understand the reasons for the lack of responses and the delays in originator's assessment, providing guidelines to SIAs and maintaining an open dialog with SIAs and addressees.

8.7) Update on 2018 Safety Recommendations

The ENCASIA Annual Report for 2018 stated that as of 27 December 2018, 265 safety recommendations had been recorded on SRIS for 2018. An additional number of 56 safety recommendations for this period were entered during 2019, for a total of 321 safety recommendations recorded on SRIS as having been issued in 2018. The total number of SRURs issued in 2018 was 54 (an increase in ten to the 44 reported in 2018 Annual Report).

The added SRUR covered:

- Outflow valve gasket heating and safety relief valves. Issued by AAIU (Bulgaria) after the investigation conducted on a serious incident occurred to a B737-400 aircraft, in a flight on route Antalya – Zurich over the territory of Republic of Bulgaria;
- FADEC system. Issued by AAIU (Bulgaria) after the investigation conducted on a serious incident occurred to an A320-231 aircraft, in a ferry flight from Bratislava airport to Sofia airport;
- Landing gear warning system. Issued by AAIU (Bulgaria) after the investigation conducted on a serious incident, occurred on Balchic Airfield, District of Varna, to a Cessna 172RG airplane;
- Instructional flights and tailwind landing on small a/c. Issued by AIIB (Cyprus) after an incident involving an Aquila AT01 aircraft at Larnaca international airport.

8.8) Safety studies

During 2019, no safety recommendations have been generated from safety studies carried out by ENCASIA members.

CONCLUSIONS (THE WAY FORWARD)

ENCASIA has started a period of transition. The first phase of peer reviews is completed. A first cycle of EMSS exercises was also successfully conducted. The peer review working group will produce the way forward regarding the scope and the depth of the peer reviews.

This will require the mobilization of new teams in order to generate a new momentum, notably because the valuable support of our colleagues from the Air Accident Investigation Branch (AAIB-UK) is no longer available as a consequence of Brexit. They greatly contributed to the successes of ENCASIA Work Programme, in particular Peer Reviews, EMSS and safety recommendations. We hope that it will be possible to resume working with the AAIB-UK as soon as possible.

ENCASIA needs to further reinforce the confidence in the ability of our Member and Observer States to work together to conduct an effective, independent safety investigation. The release of the report on Phase 1 of the peer reviews will underline how well ENCASIA has worked as a network. This publication is normally scheduled for the first semester of 2020.

During 2020, the development of ECCAIRS 2.0 and the new SRIS database should be completed. The Key User Groups (KUGs) should be finally in a position to assess these new tools. These important developments were mentioned during the 2019 workshop on safety recommendations during which ENCASIA members and aviation authorities had fruitful exchanges. There has been strong demand from the other stakeholders, in particular aircraft manufacturers to attend such workshop.

The organisation of another workshop on safety recommendations with an enlarged participation will represent an opportunity to listen to the views of the other addressees of the safety recommendations issued by ENCASIA Members.

These requests illustrate a growing interest in ENCASIA activities that have matured over the years. On 2 December 2020, ENCASIA will celebrate the 10th Anniversary of the entry into force of Regulation (EU) No 996/2010 on the investigation and prevention of accidents and incidents in civil aviation.

APPENDICES

Appendix 1: ENCASIA Work Programme for 2020

The 2020 ENCASIA Annual Work Programme includes the following actions:

1. **Working Group 1: Management of Communication.** The objectives of WG1 are to maintain up-to-date information on the ENCASIA website's public and restricted sections, to increase public awareness of ENCASIA activities, to maintain updated contact lists that could be used to support ENCASIA's mutual support activities, and to share communication Best Practices (including communication with the media) that Safety Investigation Authorities might use following major, complex or high-profile civil aircraft accidents. The restricted section of the website (Drupal) will be further developed to contain a comprehensive repository of investigation tools, processes, procedures and examples of Best Practice documents and reports that will be readily available to SIAs. Belgium, France, Hungary, Portugal, Romania, and the EC (who also provide IT support) are members of this group. This group is chaired by the Belgian Safety Investigation Authority.
2. **Working Group 2: Cooperation.** The objectives of WG2 are to maintain, update and share the inventory of Best/Good Practice for Safety Investigation Authorities, to prepare processes and short procedures that Safety Investigation Authorities might use during a safety investigation of major, complex or high-profile civil aircraft accidents, to maintain the practical guide for investigators and the leaflet addressed to victims and their relatives that facilitates their understanding of the role and the different phases of a safety investigation, and its relationship with other entities involved in dealing with civil aircraft accidents. France, Germany, Hungary, Italy, Poland, Romania, Sweden, EASA and the EC are members of this group. This group is chaired by the French Safety Investigation Authority.
3. **Working Group 3: ENCASIA Mutual Support System (EMSS).** The objectives of WG3 are to develop the ENCASIA Mutual Support System (EMSS), and organise and run in-country exercises with the purpose to allow Safety Investigation Authorities to exercise and test their National Plans to manage and organise a safety investigation of a major or complex civil aircraft accident. France, Germany, Iceland, Italy, Luxembourg, Portugal, Romania, Sweden, and the EC are members of this group. This group was chaired by the UK Safety Investigation Authority.
4. **Working Group 4: Planning and Resources.** The objectives of WG4 are to undertake the financial, planning and logistical activities required to support the ENCASIA Work Programme, and to coordinate the training activities of ENCASIA. Belgium, France, Luxembourg, and the EC are members of this group. This group is chaired by the French Safety Investigation Authority.

5. **Working Group 5: Peer Reviews.** The objective of WG5 is to develop and implement the Peer Review programme so as to help Safety Investigation Authorities enhance their safety investigation capabilities. The aim is to prepare the concept, to set the objectives and start the Peer Review Phase 2. Belgium, France, Germany, Iceland, Italy, Portugal, Romania and the EC are members of this group. This group is chaired by the German Safety Investigation Authority.
6. **Working Group 6: Safety Recommendations.** The objectives of WG6 are the smooth and standardized operations of the Safety Recommendations Database by all Safety Investigation Authorities with the progressive identification and analysis of safety recommendations of Union-wide relevance; support the development of ECCAIRS 2.0 (E2) project for the effective development of the SRIS and with the active participation to the KUG; develop a questionnaire for SIAs on SR and SRIS; develop a matrix to facilitate the understanding of SRUR and SRGC definitions (with examples); represent ENCASIA at the ECCAIRS steering board and committee and at the EASA Network of Analysts; set up the next ENCASIA training on safety recommendations open to the SIAs, NAAs and the aeronautical industry, planned for spring 2021. Austria, France, Hungary, Ireland, Italy, Romania, Slovenia, Sweden, EASA, and the EC are members of this group. This group is chaired by the Italian Safety Investigation Authority.
7. **Working Group on EASA participation in safety investigations.** The objective of this Working Group is to develop short procedures and Best/Good Practices regarding the cooperation between Safety Investigation Authorities and EASA during investigations of civil aircraft accidents and serious incidents, starting with the notification of occurrences, sharing of information, and up to the publication of the Final Report. France, Germany, Italy, Norway, Sweden, and EASA are members of this group. This group is chaired by the German Safety Investigation Authority.

Appendix 2: List of 2019 fatal accidents involving commercial activities

The Aviation Safety Network database showed that during 2019 there were 38 fatal accidents involving aircraft with a maximum capacity of 12 passengers or more that resulted in 346 fatalities. Six of the accidents involved cargo flights and 12 were commercial passenger flights. One of the 43 accident airplanes was operated by an air carrier subject to an operating ban within the EU.

#	Date	Location	Aircraft type	Air carrier	No. of fatalities
1	21 January	SE of Kidron-Stoltzfus Airfield, OH, USA	Aero Modifications AMI DC-3-65TP	Priority Air Charter LLC	2
2	30 January	ca 30 km from Whatì/Lac La Martre Airport, NT (YLE), Canada	Beechcraft 200 Super King Air	Air Tindi	2
3	8 February	21 km (13.1 mls) E off Bay Harbor Islands, FL, USA	Convair C-131B Samaritan	Conquest Air Cargo	1
4	23 February	Trinity Bay, near Anahuac, TX, USA	Boeing 767-375ER	Atlas Air	3
5	24 February	Chittagong-Shah Amanat International Airport (CGP), Bangladesh	Boeing 737-8E9	Biman Bangladesh Airlines	1
6	9 March	Finca La Bendición, San Martín, Colombia	Douglas DC-3	LASER Aéreo Colombia	14
7	10 March	50 km (31.3 mls) ESE of Addis Ababa-Bole Airport (ADD), Ethiopia	Boeing 737 MAX 8	Ethiopian Airlines	157
8	18 March	Oklahoma City-Sundance Airport, OK (HSD), USA	IAI 1124 Westwind	Sundance Airport FBO LLC	2
9	13 April	near New Albany, MS, USA	Rockwell Sabreliner 65	Classic Aviation	3
10	14 April	Lukla-Tenzing-Hillary Airport (LUA), Nepal	Let L-410UVP-E20	Summit Air	1
11	16 April	0,4 km (0.3 mls) W of Puerto Montt-Marcel Marchant Airport, Chile	Pilatus Britten-Norman BN-2B-27 Islander	Archipiélagos Servicios Aéreos	6

#	Date	Location	Aircraft type	Air carrier	No. of fatalities
12	5 May	Moskva-Sheremetyevo Airport (SVO), Russia	Sukhoi Superjet 100-95B	Aeroflot Russian International Airlines	41
13	5 May	257 km (160.6 mls) NW of Monclova, Mexico	Canadair CL-600-2B16 Challenger 601-3A	TVPX Aircraft Solutions	13
14	13 May	15 km (9.4 mls) NE of Ketchikan, AK, USA	de Havilland Canada DHC-3T Vazar Turbine Otter	Taquan Air	1
15	22 May	near Indianapolis Regional Airport, IN (KMQJ), USA	Cessna S550 Citation S/II	Unknown	2
16	24 May	500 km (312.5 mls) E off Fort Lauderdale, Florida, USA	Cessna 560 Citation Encore	Private	1
17	20 June	10 km (6.3 mls) from Rodina village, Tselinograd district, Kazakhstan	Antonov An-2	Unknown	1
18	27 June	Nizhneangarsk Airport, Russia	Antonov An-24RV	Angara Airlines	2
19	30 June	Dallas-Addison Airport, TX (ADS), USA	Beechcraft B300 King Air 350i	EE Operations LLC	10
20	25 July	Al Jufra Airbase, Libya	Ilyushin Il-76TD	Europe Air	1
21	26 July	Addenbroke Island, BC, Canada	Cessna 208 Caravan 675	Seair Seaplanes	4
22	4 August	near Fakhrabad, Tajikistan	Antonov An-2	DOSAAF Tajikistan	1
23	6 August	46 km (28.8 mls) ENE of Mayo Airport, YT (YMA), Canada	Cessna 208B Grand Caravan	Alkan Air	2
24	30 August	near Lake Siljan-Kuel, Russia	Antonov An-2R	Aviaspektr	2
25	11 September	1 km (0.6 mls) ENE of Toledo-Express Airport, OH (TOL), USA	Convair CV-440	Ferreteria e Implementos San Francisco	2

#	Date	Location	Aircraft type	Air carrier	No. of fatalities
26	11 September	near Gransee Airfield, Germany	Cessna 208 Caravan I	GoJump	1
27	18 September	10 km (6.3 mls) from Kampung Mamontoga, Hoeya District, Mimika Regency, Indonesia	Viking Air DHC-6-400 Twin Otter	Carpediem Aviation	4
28	23 September	Seronera Airstrip (SEU), Tanzania	Cessna 208B Grand Caravan	Auric Air	2
29	2 October	Windsor Locks-Bradley International Airport, CT (BDL), USA	Boeing B-17G Flying Fortress	The Collings Foundation	7
30	4 October	1,3 km (0.8 mls) SE of Lviv-Danylo Halytskyi International Airport (LWO), Ukraine	Antonov An-12BK	Ukraine Air Alliance	5
31	17 October	Unalaska-Tom Madsen Airport, AK (DUT), USA	Saab 2000	PenAir - Peninsula Airways	1
32	26 October	Family Lake, Little Grand Rapids First Nation, MB, Canada	de Havilland Canada DHC-3T/M601 Turbine Otter	Blue Water Aviation Services	3
33	14 November	Maraú-Barra Grande Airport, BA, Brazil	Cessna 550 Citation II	José João Abdalla Filho	5
34	24 November	S of Goma Airport (GOM), Congo (Democratic Republic)	Dornier 228-201	Busy Bee Congo	19
35	9 December	ca 11 km NE of Victoria Regional Airport, TX (VCT), USA	Cessna 208B Super Cargomaster	Martinaire	1
36	19 December	near Charallave-Óscar Machado Zuloaga Airport, Venezuela	Beechcraft A100 King Air	Private	9
37	24 December	near Tastiota, Mexico	Cessna 208B Grand Caravan	Calafia Airlines	2
38	27 December	near Almaty Airport (ALA), Kazakhstan	Fokker 100	Bek Air	12

Table 2. List of 2019 fatal accidents involving commercial activities

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

Appendix 3: Safety Recommendations of Union-wide Relevance

Aircraft fitted with Lycoming AEIO-540 engines equipped with Hartzell two-blade metal propellers

The BEA (France) opened a safety investigation for the accident occurred to a Pitts S2-B equipped with a Lycoming AEIO540 engine and Hartzell two-blade metal propeller, during an aerobatic flight with several figures leading to a rapid variation in the orientation of the axis of rotation of the propeller.

Returning from the flight, in the downwind leg, the pilot felt vibrations which increased in intensity. He reduced engine power and declared an emergency. The assembly formed by the propeller and part of the crankshaft separated from the engine and struck the fin. Observing the appearance of smoke and the presence of oil on the windshield of the airplane, the pilot shut down the engine and performed a forced landing.

The accident resulted from progressive fatigue cracking and then the rupture of the crankshaft due to the propeller applying rotational bending loads to the crankshaft during certain aerobatic maneuvers. The investigation showed that the combination of Lycoming AEIO-540 engines and Hartzell two-blade metal propellers, when used in aerobatic flights comprising certain maneuvers with a strong gyroscopic effect, constituted a higher risk factor of crankshaft rupture.

The investigation showed that Lycoming, aware that there was a safety problem, published a Service Bulletin, numbered 482 and identified as "Mandatory", in 1988. This SB records that the location of the propagation area makes early detection of this fatigue cracking difficult and that it can occur quickly. Moreover, the recommended maintenance operations with a very short interval are unrealistic. What is more, the visual inspection stipulated seems insufficient.

The in-flight rupture of the crankshaft can be considered as catastrophic and other previous occurrences involving such a rupture had shown that the operators were not aware of the instructions in SB No 42 or of the associated risks they were running.

Similar occurrences may occur to other aerobatic airplanes equipped with similar crankshafts and propellers.

From 1996, several models of three-blade composite propellers were installed on this type of engine and used in aerobatic maneuvers. The BEA (France) is not aware of crankshaft ruptures with these configurations, linked to maneuvers applying substantial loads on the crankshaft.

Consequently, the BEA recommended that:

- Without waiting for action by the FAA, EASA inform the operators of airplanes equipped with the engines concerned by Lycoming Service Bulletin No 482 and Hartzell two-blade metal propellers of the risks of crankshaft rupture associated with "unlimited" type aerobatic maneuvers.

  (Safety recommendation: FR.SIA-2019-0035)

Limitations of conventional navigation aids in the recurrent training

A serious incident occurred to an EMB145EP and an ultralight aircraft in uncontrolled airspace. During the self-positioning and about seven nautical miles south of the outer marker beacon "ON", EMB145 suddenly initiated a left turn towards the west outside the control zone and descended below controlled airspace, approaching the ultra-light aircraft. As EMB145 descended and approached the aircraft, a near collision incident occurred.

The investigation established that the incident was caused by the fact that planning and follow-up of the approach were not carried out in an appropriate manner. A contributing factor has been lacking of knowledge of false ILS signals.

Consequently, the SHK (Sweden) recommended EASA to:

- Ensure that clear requirements regarding the limitations of conventional navigation aids are included in the recurrent training.
  (Safety Recommendation: SE.SIA-2019-0004)

Requirements, relating to identification, avoiding and elimination of uncontrolled flight situations, for the maintaining of the Sailplane Pilot Licence

The pilot involved in the accident set off for a cross-country flight task in a new type of powered glider after two training take-offs altogether. She interrupted the task, presumably due to weather conditions unfavorable for gliding, and turned back. Then, flying circles in order to catch a thermal lift, she temporarily lost control of the aircraft which began a steep fall. Presumably, the pilot tried to maneuver the aircraft from the fall so intensively that its frame was subject to overload, the left wing fractured and then separated from the frame completely. Then the aircraft falling practically in fully vertical direction, crashed to the ground at high velocity in a wooded terrain; the aircraft was fully destroyed, and the pilot died on the spot immediately. The pilot was wearing a serviceable parachute, but the investigation found no sign of her trying to leave aircraft.

During the investigation, the Investigating Committee of Transportation Safety Bureau established that pilots have no such training obligation related to the maintaining of the Sailplane Pilot Licence, which would maintain their practice and knowledge related to identification, avoiding and elimination of uncontrolled flight situations.

Therefore:

- TSB (Hungary) recommended European Aviation Safety Agency (EASA) to consider determining theoretical and practical requirements, relating to identification, avoiding and elimination of uncontrolled flight situations, for the maintaining of the Sailplane Pilot Licence.
- In the case of acceptance and expected implementation of the recommendation, the safety risks originating in erroneous management of wing drop, spin or uncontrolled flight situations during sailplaning could be reduced.

  (Safety Recommendation: HU.SIA-2019-0002)

Maximum age of flight instructors in non-commercial aviation

While preparing for landing in the course of performing their training tasks, two sailplanes collided on the final approach at Esztergom Airport. One of the aircraft became uncontrollable and crashed as a result of the collision, while the other was able to land safely, despite its damages. The crew of the crashed aircraft died on the spot.

During its investigation, the Investigating Committee of Transportation Safety Bureau established also that the maximum age of aircrews involved in commercial air transport is limited (70 years of age in the case of balloon pilots and sailplane pilots), while the maximum age of flight instructors participating in the practical training of non-commercial pilots is not regulated. Practical flight instruction is a more complex activity than the aforesaid commercial aviation offering pleasure flights for passengers.

Therefore:

- Transportation Safety Bureau recommends European Aviation Safety Agency (EASA) to consider initiate regulation of the maximum age of flight instructors participating in the practical training of pilots involved in non-commercial aviation, similarly to the area of commercial air transport.
- The position of the IC is that in the case of acceptance and expected implementation of the recommendation, the risk arising from age-specific features of flight instructors involved in practical training can be eliminated, similar to the area commercial aviation offering pleasure flights for passengers.

  (Safety Recommendation: HU.SIA-2019-0003)

Limitations on Trent 1000 G/01A engine

The ANSV (Italy) opened a safety investigation on a serious incident occurred 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.

The borescope inspection of the engine Trent 1000 G/01A, performed after the event, highlighted the fracture of two IPT blades. One of these is attributable to the same corrosion fatigue fracture mechanism that was responsible for ten previous cases of IFSD in the Trent 1000 fleet. In one of those cases, in addition to IFSD the blade release also caused damage on the LPT drive arm, proving further negative effects on safety could be possible as a consequence of a IPT blade fracture beside what happened in the investigated event, in which damages to the aircraft and to objects on the ground were recorded. Indeed, for this matter EASA had already recognized the need to maintain fleet safety and had mandated several Rolls-Royce recommended safety actions in the past two years through 6 ADs, the latest and only live action being issued in NMSB 72-AK186, which instructs a hard life for pre-modification blades and is mandated by EASA AD 2019-0135. However, the in-flight IPT blade failure of the Trent 1000 G/01A of subject event happened 200 flight cycles before the hard life limit, demonstrating this not sufficient to avoid detrimental effects on safety.

Consequently, the ANSV issued the following Safety Recommendations before the completion of the investigation:

- EASA to take immediate actions to achieve a higher level of safety, also taking in consideration, but not limiting EASA initiatives to, defining different and more stringent time limits for the Trent 1000 pre-mod 72-H818 IPT blades.

  (Safety Recommendation: IT.SIA-2019-0009)

- EASA to re-evaluate the whole validity of the service management adopted by the manufacturer for the Trent 1000 pre-mod 72-H818 IPT blades, endorsed by the AD 2019-0135.

  (Safety Recommendation: IT.SIA-2019-0010)

Furthermore, the investigation determined that the right engine of subject Boeing B787-8, was also a pre-mod 72-H818, having less flight cycles remaining than the left engine (103 FCs remaining).

Since the life limit imposed has been proved to be not adequate to prevent the left engine to fail, as well as another known similar case occurred on 15th of May 2019 and, at the time the ANSV Safety Recommendation is issued, there is no requirement for de-pairing pre-mod 72-H818 engines, there was the possibility also that the right

engine could have failed. In addition, in case of one engine inoperative the engine that remains operative undergoes overall higher solicitations. This would increase the probability of a DIFSD.

For the above reason, the ANSV issued following further Safety Recommendation:

- EASA to evaluate provisions relevant to the de-pairing of pre-mod 72-H818 engines, avoiding two engines of the same pre-mod status being installed on the same aircraft, thus further lessening the possibility of a DIFSD.

  (Safety Recommendation: IT.SIA-2019-0011)

Propellers fitted on ATR 72

On 4 May 2014, an ATR 72-212A encountered severe vibrations on engine #2 propeller during descent at a speed of 246 kt as the crew was moving power levers to the Flight Idle position, followed by a warning associated with the electronic propeller control (PEC) of the right propeller.

After the flight, it was found that the drive shaft of the right engine AC wild generator had ruptured and it was replaced. A maintenance team carried out tests on the two engine/propeller assemblies. No vibration or abnormal operation was revealed.

The flight the next day proceeded normally. During the landing run, the crew reported a loud vibration noise when they moved the power levers from the flight idle to ground idle position. Following this flight, various maintenance operations were undertaken.

Three ground tests of the engine/propeller assemblies were carried out and did not reveal any abnormal operation. A component of the right propeller pitch change mechanism (propeller valve module) was replaced. A fourth ground test was started, during which the power levers were moved to the reverse position. Vibrations appeared and the engines were immediately shut down. After the engine shutdown, blades 1, 2, 5 and 6 of the right propeller were in the feather position while blades 3 and 4 seemed to stay in the reverse position. The findings on the disassembly of the right propeller blades included the rupture of the blade 4 trunnion pin and damage to the propeller blade actuator yoke plate.

The circumstances and damage observed were similar to that which had been observed in an investigation into a serious incident on 18 September 2013 in Indonesia, involving an ATR 72-212A registered PK-WFV. An investigation was opened by the Indonesian investigation authority, the NTSC, who issued an immediate safety recommendation to the operator of the aircraft concerning the verification of the condition of the propeller blade trunnion pins and the search for crack indications on part of the fleet.

On 30 November 2014, a similar new incident occurred in Sweden to an ATR 72-212A registered SE-MDB, for which an investigation was opened by the Swedish investigation authority, SHK. In total, seven cases of vibration phenomena on the ATR 72-212A have been reported in the last few years.

The investigation also revealed that the maintenance operations carried out on 9Y-TTC following the vibration phenomena did not identify this damage.

Consequently, the BEA (France) recommended that:

- EASA assess the benefit of imposing the installation of vibration level indicators for each propeller-engine assembly in the cockpits of commercial air transport airplanes equipped with turboprop engines.

  (Safety Recommendation: FR.SIA-2019-0024)

Certain choices and hypotheses meant that the tests carried out during the propeller certification campaign in 1994-1995 did not show certain phenomena observed during the flight tests in 2014 and 2016, in particular the friction at the blade root bearings (ball bunching) and the cyclic loads on the forward yoke plate of the propeller pitch change mechanism when the airplane is in descent at a speed close to VMO, with the power levers in the flight idle position.

The FAA advisory circular currently in force and proposing an assessment method of the vibration stresses borne by a propeller during its certification, recommends incorporating descents with flight idle at various speeds in the flight test programme. Its systematic implementation at various speeds around VMO would allow the existence of vibration phenomena, such as that observed during tests in 2014 and 2016, to be checked for.

Consequently, the BEA (France) recommended that:

- EASA and the FAA impose that the initial certification of propellers includes the carrying out of an in-depth study of the actual vibration behavior of each propeller in flight idle with speeds around VMO. [EASA: Recommendation 2019-019] [FAA: Recommendation 2019-034]

  (Safety Recommendations: FR.SIA-2019-0025, FR.SIA-2019-0026)

The investigation was not able to identify the most probable damage scenario leading to the overload of the mechanical elements of the propeller pitch change mechanism.

However, this vibration stress on the forward yoke plate in flight idle and at a speed close to VMO indicates specific mechanical behaviour. When the moment generated

by the aerodynamic load of a blade becomes greater than that generated by the counterweight and the inertia of the blade, the trunnion pin cyclically moves away from the aft yoke plate and sometimes comes into contact with the forward yoke plate. Sometimes the direction of the sum of the moments may change during a cycle. This phenomenon depends on the speed of the aircraft. The elements collected in the safety investigations show that this phenomenon can appear above a speed of 240 kt. During flight tests, this phenomenon was not observed at a speed of 230 kt.

Consequently, the BEA (France) recommended that:

- EASA ensure that research is pursued with a view to understanding the sequence of damage to the propeller and the cause(s) of the overloads and that pending the outcome of this research, the operational procedures recommended by the ATR72-212A manufacturer for the descent are reviewed to prevent any flight between 240 and 250 kt at flight idle.

  (Safety Recommendation: FR.SIA-2019-0027)

Initial certification of take-off performance of the A340-300

The occurrence refers to an Airbus A340 carrying out a commercial passenger flight from Bogotá Eldorado airport (Colombia) to Paris Charles de Gaulle airport (France). The take-off was performed at night from runway 13R which is 3,800 m long with a clearway (CWY) of 300 m. The rotation rate of the airplane was slow. The main landing gears left the ground when the airplane was at 140 m from the opposite runway threshold.

The aircraft flew over the opposite runway threshold at 6 ft, detected by the Radio Altimeter (RA). The end of the CWY was crossed at a height of 20 ft RA. The airplane flew over the ILS antennas (first obstacle) at a vertical distance of 12 ft. The investigation showed that the serious incident was the result of insufficient nose-up inputs from the PF which increased the take-off distance.

In the conditions of the serious incident, the initial nose-up input then held at the typical value recommended by the FCTM (2/3 of the backward deflection) was not sufficient to reach the rotation rate of 3°/s which is the rotation rate retained in the certified performance model, also mentioned in the FCTM.

Before this event, the difference between the rotation rates obtained in operations and that taken into account in the performance calculations had not been identified by the operators of the Airbus A340-400 due to the absence of air safety reports and monitoring of take-off performance during flight analyses.

During the investigation, the operators, Air France and Lufthansa, the manufacturer, Airbus and the certification authority, the European Aviation Safety Agency (EASA) adopted safety measures which were communicated to the BEA (France).

For the nature of this event, the safety issues identified by the safety investigation potentially impacts in their certification process all CS-25 aircraft, as well as several operators in Europe and in the world.

The safety recommendations issued by the BEA concern the certification of take-off performance, the management of risks related to long take-offs and the flight analysis program.

In particular, the BEA recommended that EASA, in coordination with Airbus:

- Re-examine the validity of the initial certification hypotheses of the A340-300 take-off performance. [Recommendation FRAN2019-020]

  (Safety Recommendation: FR.SIA-2019-0016)

- Take the necessary measures to re-establish consistency between the take-off performance in operations and that established during certification on the Airbus A340-300.

  (Safety Recommendation: FR.SIA-2019-0017)

- With the other primary certification authorities, examine whether other CS-25 type aircraft are affected by this type of difference in performance and take the corrective measures that may be necessary.

  (Safety Recommendation: FR.SIA-2019-0018)

The Safety Information Bulletin (SIB) published by EASA in November 2017, sets out the need for each operator to identify, assess and take the appropriate measures to limit the risk associated with a long take-off. In particular, operators and training organisations are recommended to implement specific training about the rotation technique while taking into account the introduction of additional risks such as the tail-strike.

However, not all Airbus A340-300 operators have necessarily measured the impact of the variability in their crews' rotation technique on their risk management of long take-offs.

Consequently, the BEA (France) recommends that pending measures taken to re-establish consistency between the performance reached in operations and those

established by the certification, EASA, in coordination with the national oversight authorities:

- Require operators operating the A340-300 to set up safety measures to reduce the observed variability in the pilots' rotation technique.

  (Safety Recommendations: FR.SIA-2019-0019)

- Require operators operating the A340-300 to set up safety measures to restore sufficient take-off distance margins by comparing the possible difference between the take-off performance reached in operations and that established during certification.

  (Safety Recommendation: FR.SIA-2019-0020)

The significant number of years which have elapsed between the entry into service of the A340-300 and the identification of the difference between the certified take-off performance and that reached in operational situations, shows that operators and the manufacturer were not fully aware of the impact of this difference on operation safety before the serious incident of 11 March 2017. Yet the EOFDM working group had recommended from 2012 that operators set up monitoring of simple parameters to detect long take-offs.

The investigation showed the importance for an authority to have flight data information available based on the shared analysis of a significant number of flights performed by several operators.

Consequently, the BEA (France) recommends that EASA in coordination with the national oversight authorities:

- Ensure that European operators introduce in their flight analysis programmes, the indicators required to monitor take-off performance and at the very least, long take-offs.

  (Safety Recommendation: FR.SIA-2019-0021)

- Collect and analyse the results of this monitoring in order to produce a report on the actual situation in operations

  (Safety Recommendation: FR.SIA-2019-0022)

HEMS crew requirements

During a HEMS flight, after a tentative to land the helicopter in order to rescue two skiers, the pilot elected to hoover and deploy rescue personnel to the ground.

During the maneuver, the pilot lost visual references due to white out and the helicopter crashed on the ground.

The accident occurred in a mountainous area in which it is possible to run into atmospheric phenomena capable of abruptly degrading visibility, with the consequent need to carry out a careful monitoring of on-board instrumental equipment.

The composition of the crew was not recognized by the investigation among the causal factors of the event. However, in light of prevention, the ANSV considers it appropriate to suggest the introduction of additional safety barriers.

In this perspective, GM1 SPA.HEMS.130 (e) (2) (ii) Crew requirements Specific Geographical Areas, applicable to night flights, was considered and analysed. This indicates that, in an environment where the topography and lighting conditions are such as to degrade the visual references and make flight conduct problematic in such a way as to require the monitoring of controls and instruments, the crew should consist of two pilots.

Similar indications for the day flight have not been found, where also conditions could be found that require the monitoring of the controls and on-board instruments due to the possible deterioration of the visual references, due to weather conditions and/or light and/or orography.

In this context the EASA NPA 2018-04 Helicopter emergency medical services performance and public interest sites, relating to the strengthening of the training of the HTCM, lead to outline for this role a figure that looks very similar to a co-pilot. The NPA in question, bringing the two figures closer, further highlights the need for a GM to clarify what conditions would make it advisable to use a co-pilot with respect to a HTCM for daytime HEMS flights.

- ANSV (Italy) recommends to draw up GM applicable to daytime flights, conceptually similar to the discussed GM1 SPA.HEMS.130 (e) (2) (ii), which provide indications about the opportunity of using two pilots in specific geographic areas where the orography and the possible sudden changes in visibility can make the conduct of the flight problematic, requiring the monitoring of the controls and the instruments, even in a preventive manner.

  (Safety Recommendation: IT.SIA-2019-0001)

Parachutist activities

The accident occurred to a Pilatus PC-6 during a parachutist launch flight. While preparing for launch, the auxiliary parachute of one of the parachutists opened uncommanded and pulled the parachutist out of the aircraft, hitting the right stabilizer

while the parachute remained jammed in the tail which, finally, collapsed. All other parachutist left the airplane, while the two pilots remained on the aircraft, uncontrolled, until it impacted the ground, approximately two minutes after the event.

Accidental openings on board of auxiliary or main parachutes in the launch phase are events that occur with a certain frequency (for example, see the documentation on the United States Parachute Association website, https://uspa.org/), despite the technological progress of launch materials. The results of such accidental openings are unpredictable, but the possibility of interference, even serious ones, with the structures and control surfaces of an aircraft is not remote. The rescue parachute can, in similar circumstances, constitute the extreme resource to allow the survival of the crew or non-parachutist occupants present on board an aircraft used in parachutist launch activities.

- The ANSV (Italy), in the light of the evidence emerged from the investigation, recommends providing for the obligation, for all those (non-paratroopers) who are present on-board aircraft engaged in parachutist launch activities, to wear the rescue parachute.

  (Safety Recommendation: IT.SIA-2019-0003)

ATP integrated training schedule

The accident occurred to a Cessna 152 during a night-time solo training flight under visual conditions at the Ponte de Sor – LPSO aerodrome.

The student pilot performed three circuits on runway 21 with "stop and go", as planned and without reported problems and took off to perform the fourth circuit. The student pilot reported the right downwind to runway 21 and according to witnesses in the control room, few seconds later, the aircraft began to lose altitude with a steep attitude, disappearing behind the trees on the horizon. The student pilot died on site due to the extent of injuries.

The safety investigation indicated as the cause of the accident the inadvertent entry in IMC with consequent student pilot spatial disorientation, due to the loss of visual references. Contributing factors were identified in local atmospheric conditions favorable to low altitude cloud formation, crews operating in the area did not report changes in local weather conditions (PIREP), low student pilot night flight experience, and the lack of minimal IFR training.

Consequently, the GPIAAF (Portugal) recommended that:

- the European Aviation Safety Agency, EASA, evaluate and change the ATP integrated training schedule, where the nightly solo training flight, currently in

phase 3, will be completed only in phase 4 after the basic instrument flight lessons.

(Safety Recommendation: PT.SIA-2019-0003)

Revision of the Airworthiness Directive 2005-0035

The TAIIB (Latvia) issued following Safety Recommendation after a serious incident occurred to a Piper PA-28 at aerodrome Spilve. During the flight, damage to the right-hand landing gear strut of the aircraft was noticed. During emergency landing at aerodrome Ādaži aircraft sustained insignificant damages, the pilot and the passenger did not sustain injuries in the aircraft serious incident.

- To make revision of the Airworthiness Directive 2005-0035 according to the recommendations of the aircraft manufacturer due to the main cause of the aviation serious incident of the aircraft PA-28-140 which is related to deficiencies in the regulatory documents of the aircraft maintenance.

  (Safety Recommendation: LV.SIA-2019-0001)

Certification Specifications for Aerodromes Design CS-ADR-DSN

The CIAIAC (Spain) issued following Safety Recommendation after an occurrence involving an Airbus A320-232 at Bilbao (LEBB) airport.

- It is recommended that EASA amend the Certification Specifications and Guidance Material for Aerodromes Design CS-ADR-DSN so as to standardize the distances for the touchdown zone signs, whether they are markings or lights.

  (Safety Recommendation: ES.SIA-2019-0005)

- END -