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# **FD WG meeting**

**15-10-2020**

**Start time 11:00 CET**

“The airline industry that emerges from this crisis, will not look like the one that went into it.”

***Capt. Jon Horne, ECA President***



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# Agenda

1. Adoption of the Agenda, approval of the [last report](#) & Apologies for absence
2. EU Reg 376 review and JC related matters
  - Update
  - Meetings and Courses
3. Data4Safety programme – Proof of Concept phase progress
  - Status update
  - Demo D4S visualisations
  - Task Teams and development of new metrics
  - Data Governance (Documents already shared)
    - o Implementation of DaGo v1.2
    - o Supervisory Panel audit
    - o External partners
    - o Q&A
  - 2020 timeline, extension of PoC phase
4. CVR/AIR
  - AIR
    - o Latest AIR developments UK
    - o Update to FDM guidelines ECA/IFALPA
  - EUROCAE WG-118 (ED-112A revision)
    - o Overview
    - o Subgroup progress
      - Flight Crew Machine Interface Recording
      - Automatic Deployable Recorders and Telemetry of Flight Data
5. Other external meetings relevant for FD WG
6. AOB

**End**



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## Reg 376 review and JC related matters

**Update  
Meetings and Courses**

**Related documents**

EU Reg 376-2014

EU IR 2015-1018

GM to EU IR 2015-1018

## **RUSSIA SENTENCES CONTROL STAFF**

**LATEST DEVELOPMENTS IN  
SWITZERLAND: THE DELICATE BALANCE  
SAFETY VERSUS JUSTICE INTEREST**

**EUROPEAN COURT OF HUMAN RIGHTS DECLARES  
CAGLIARI APPEAL INADMISSIBLE**



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# ***Experience Sharing Enhanced SMS ES<sup>2</sup>-WS01-2020***



## ***JUST CULTURE & JUDICIARY***

*“Just culture across industries: Continuing to learn from each other”*

**ONLINE WEBINARS – please use the below LINK to Register**

[https://us02web.zoom.us/webinar/register/1016013912195/WN\\_GM4RAyueQxGnQ4gwHvtY\\_w](https://us02web.zoom.us/webinar/register/1016013912195/WN_GM4RAyueQxGnQ4gwHvtY_w)

**27, 28, 29 October & 17 November**

***Every day starting at 14.00 (CET)***



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## Data4Safety programme – Proof of Concept phase progress

**Status update**

**Demo D4S visualisations**

**Task Teams and development of new metrics**

**Data Governance**

**2020 timeline, extension of PoC phase**

**Related documents**

**D4S Governance documents**



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# **FD WG meeting**

**15-10-2020**

**LUNCH**

**We resume at 14:00 CET**





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## CVR/AIR

### AIR

**Latest AIR developments UK**  
**Update to FDM template guidelines ECA/IFALPA**

## EUROCAE WG-118

**Overview**  
**Subgroup Progress**

**Related documents**  
**EUROCAE ED-112A**



# Why is this a big deal???

## Call for Participation EUROCAE WG-118 Crash-protected and Lightweight Flight Recorders

Response required until 17 April 2020



The WG will develop:  
**ED-112B MOPS<sup>1</sup>** for Crash Protected Airborne  
Recorder Systems, **expected mid 2022**

The **kick off meeting of WG 118** will be held ~~at the~~  
~~EUROCAE premises in Saint-Denis~~ on **11 June 2020**

<sup>1</sup> Minimum Operational Performance Specification



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# EUROCAE and ED-112A

- EUROCAE** - is an international non-profit making organisation.  
- is a membership organisation

Its work programme is principally directed to the preparation of performance specifications and guidance documents for civil aviation equipment, for adoption and use at European and world-wide levels.

**ED-112A** (September 2013)

Supersedes ED-55 (May 1990),  
ED-56A (December 1993)  
and **ED-112** (August 2003)

The Performance Specifications detailed in this document are based on the Standards and Recommended Practices (SARPs) published by **ICAO in Annex 6 of the Chicago Convention**.

**EUROCAE performance specifications are recommendations only.**

EUROCAE is not an official body of the European governments; its recommendations are valid statements of official policy only when adopted by a particular government or conference of governments.



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# So, let's have a look...

## 6.3 Flight recorders

*Note 1.— Crash protected flight recorders comprise four systems: a flight data recorder (FDR), a cockpit voice recorder (CVR), an airborne image recorder (AIR) and a data link recorder (DLR). Image and data link information may be recorded on either the CVR or the FDR.*

*Note 2.— Lightweight flight recorders comprise four systems: an aircraft data recording system (ADRS), a cockpit audio recording system (CARS), an airborne image recording system (AIRS) and a data link recording system (DLRS). Image and data link information may be recorded on either the CARS or the ADRS.*

*Note 3.— Detailed guidance on flight recorders is contained in Appendix 8.*

### 6.3.1 Flight data recorders and aircraft data recording systems

*Note 1.— FDR and AIR performance requirements are as contained in the EUROCAE ED-112, Minimum Operational Performance Specification (MOPS) for Crash Protected Airborne Recorder Systems, or equivalent documents.*

*Note 2.— ADRS performance requirements are as contained in the EUROCAE ED-155, Minimum Operational Performance Specification (MOPS) for Lightweight Flight Recording Systems, or equivalent documents.*

*Note 3.— Parameters to be recorded are listed in Tables A8-1 and A8-3 of Appendix 8.*



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# And for the EU...

Annex to ED Decision 2015/019/R

## CS-25 BOOK 2

3 Where a cabin crewmember's work area is not within easy reach of the equipment provided at his seat station, an additional unit should be provided at the work area.

### **AMC 25.1457** **Cockpit Voice Recorders**

In showing compliance with CS 25.1457, the applicant should take account of **EUROCAE document No. ED-56 'Minimum Operational Performance Requirement for Cockpit Voice Recorder System'**, as referred to in ETSO-C123a.



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# ED112 Structure

**Section 1  
General  
Background**

**Section 2  
Common  
Design  
Specifications**

**Section 3  
Deployable  
Recorders**

**Section 4  
Combined  
Recorders**

**Section 5  
Recorder  
Independent  
Power Supply**

**Part I  
Cockpit Voice  
Recorder  
System**

**Part II  
Flight Data  
Recorder  
System**

**Part III  
Image Recorder  
System**

**Part IV  
CNS/ATM  
Recorder  
System**

**TABLE 1-1.1: EXAMPLES OF APPLICABILITY**

Recorder Type	Section					Part			
	1	2	3	4	5	I	II	III	IV
CVR only, non-deployable	X	X				X			
CVR combined with data link, non-deployable	X	X		X		X			X
CVR combined with data link and FDR, deployable	X	X	X	X		X	X		X
CVR combined with FDR, non-deployable, internal RIPS	X	X		X	X	X	X		
Image combined with FDR, non-deployable	X	X		X			X	X	
CVR combined with FDR and data link, non-deployable	X	X		X		X	X		X
CVR, FDR, data link, and Image, deployable	X	X	X	X		X	X	X	X

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# WG 118 Scope of Work Updates to ED112A (1/2)

## Breakdown according to flight recorder functional area:

1. General equipment specifications applicable to flight recorders
  1. Revision of seawater immersion specifications
  2. Revision of installation and equipment specifications
  3. Incorporation of updates to ED-155
  4. Incorporation of EU requirements in addition to ED-155
2. Flight crew-machine interface recording (FCMIR)
  1. Definition of installation and performance specifications
  2. Definitions and specifications for Airborne Image Recording (AIR)
  3. Definitions and specifications for Screen Capturing
3. CVR
  1. Revision of system performance specification
  2. Definition of audio quality specification
  3. Revision of inspection and recording protection and preservation
4. GADSS TRFD equipment
  1. Definition of installation and performance specifications
  2. Definitions and specifications for Flight Data Transmission systems (TFD)
  3. Definitions and specifications for Automatic Deployable Recorders (ADFR)





# WG 118 Scope of Work Updates to ED112A (2/2)

## Breakdown according to application area:

1.      **Recorders for large aeroplanes**
  1.      Revision of required parameters
  2.      Revision of performance requirements (e.g. sampling rates, precision...)
  
2.      **Recorders for UAS / RPAS**
  1.      Definition of installation and performance specifications
  
3.      **Recorders for Urban Mobility / VTOL**
  1.      Definition of installation and performance specifications
  
4.      **Recorders for light turbine-engine aeroplanes and helicopters manufactured after Sept. 2022**
  1.      Incorporate updates to ED-155



# Subgroups Leaders / Editors

<b>1</b>	<b>FRG</b>	<b>Flight Recorders: General Issues</b>
	L	John Fisher (FAA)
	E	Robin Hudson (DRS)
<b>2</b>	<b>MIR</b>	<b>Flight Crew / Machine Interface Recording (FCMIR)</b>
	L	Bert Bonke (ECA)
	E	
<b>3</b>	<b>CVR</b>	<b>CVR Audio System</b>
	L	Mark Ford (AAIB)
	E	Mike Weed (L3)
<b>4</b>	<b>TRF</b>	<b>GADSS TRFD Equipment</b>
	L	Blake van den Heuvel for ADFR (Leonardo DRS) & John Fisher for TFD (FAA)
	E	TBA
<b>5</b>	<b>UAS</b>	<b>Recorder for UAS / RPAS</b>
	L	Tom Pack (ACR)
	E	Rob Jackson (General Atomics UK)

# ECA Core Team

Jean Felix **Barral** (IFALPA AAP Vice-Chair)

Julian Malacan

Tim van Rooij

Bert Bonke

Focus on MMR and TRF



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# **SG1** FRG - Flight Recorders - General Issues

SG1 will address issues that cannot be addressed in any of the other SG's, as well as document consolidation

To date only one meeting was held to discuss working procedures and SG governance



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**IFALPA**  
The Global Voice of Pilots

12POS05



2 November 2011

Cockpit image recording on helicopters

15POS16

8 February 2016

**UPDATE - Airborne Image Recorders (AIRs) and  
Recording Systems (AIRS)**



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## Related document list

01	EUROCAE	ED-112A	2013 09 01 MOPS for Crash Protected Airborne Recorder Systems
02	EUROCAE	ED-203A	2018 06 01 Airworthiness Sec Methods and Considerations
03	EUROCAE	ED-204	2014 06 01 Info Sec Guidance for Continuing Airworthiness
04	ICAO	Annex 02	2005 07 01 10th Ed Rules of the Air
05	ICAO	Annex 06 Pt 1	2018 07 01 11th Ed Amdt 43 Operation of Aircraft Air Transport
06	ICAO	Annex 06 Pt 2	2018 07 01 10th Ed Amdt 36 Operation of Aircraft GA
07	ICAO	Annex 06 Pt 3	2018 07 01 09th Ed Amdt 22 Operation of Aircraft Helos
08	ICAO	Annex 06 Pt 4	Not published yet - UAS Operations
09	ICAO	Annex 10 Vol 1	2018 07 01 07th Ed Aero Telecom Radio Nav Aids
10	ICAO	Annex 10 Vol 2	2016 07 01 07th Ed Comm Procedures incl PANS Status
11	ICAO	Annex 10 Vol 3	2007 07 01 02nd Ed Comm Systems
12	ICAO	Annex 10 Vol 4	2014 07 01 05th Ed Surv and TCAS
13	ICAO	Annex 11	2018 07 01 15th Ed Air Traffic Services
14	ICAO	Annex 12	2004 07 01 08th Ed Search and Rescue
15	ICAO	Annex 13	2016 07 01 11th Ed Aircraft Accident and Incident Investigation
16	ICAO	Annex 17	2001 03 01 10th Ed Security
17	ICAO	Annex 19	2013 07 01 01st Ed Safety Management
18	ICAO	Doc 9756 Pt 1	2015 00 00 2nd Ed Manual of Accident Invest Org and Planning
19	ICAO	Doc 9756 Pt 2	2012 00 00 1st Ed Manual of Accident Invest Procedures and Checklists
20	ICAO	Doc 9756 Pt	2011 00 00 1st Ed Manual of Accident Invest Investigation
21	ICAO	Doc 9756 Pt 4	2014 00 00 2nd Ed Manual of Accident Invest Reporting
22	ICAO	Doc 9859	2018 00 00 4th Ed Safety Management Manual (SMM)
23	ICAO	Doc 9873	2010 00 00 2nd Ed Manual on the Qual Management Sys for Provision of Met Service for Intl Air Nav
24	ICAO	Doc 9946	2011 00 00 1st Ed Manual on Regional Accident and Incident Investigation Org
25	ICAO	Doc 9973	2013 00 00 1st Ed MANUAL on Assistance to Acft Accident Victims and Families
26	ICAO	Doc 9998	2013 00 00 1st Ed POLICY on Assist to Acft Accident Victims and Families
27	ICAO	Doc 10000	2014 00 00 1st Ed Manual on Flt Data Analysis Programs
28	ICAO	Doc 10053 Pt 1	2016 00 00 1st Ed Manual on Protection of Safety Info
29	ICAO	Doc 10054	2019 06 01 1st Ed Manual on Loc of Acft in Distress and Flt Rec Data Rec
30	ICAO	Doc 10123	2018 11 30 Second High Level Conf on Aviation Security
31	RTCA	B-14	2001 12 04 Future Flt Data Collection Committee Final Report
32	RTCA	DO-240	1997 07 29 MOPS for ATN
33	RTCA	DO-305	2007 06 26 FANS 1A ATN B1 Interop Std
34	RTCA	DO-326A	2014 08 06 Airworthiness Security Process Spec
35	RTCA	DO-355	2014 06 17 Info Security Guidance for Continuing Airworthiness
36	RTCA	DO-356	2014 09 23 Airworthiness Security Methods and Considerations



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# SG3 CVR – CVR Audio System

**IFALPA**  
The Global Voice of Pilots



15POS15

April 21 2015

## Extension of Cockpit Voice Recorder (CVR) Duration

15POS17

April 21 2015

## CVR Erase Function

17POS06

03 May 2017

## Access to CVR Data for Maintenance Purposes

17AAPBL01

03 May 2017

## Access to CVR Data for Maintenance Purposes



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# SG3 CVR – CVR Audio System

- CVR recording format
  - compressed or uncompressed
- Frequency bandwidth
  - alignment with ED-155
- Performance of the CAM
  - >one CAM – suggested location
  - Continued use of AGC / compression
- Number of CVR channels
  - guidance on >4 channels
  - Separation of pilot hot mic and receive audio signals
- Setting of signal levels
  - incorporate guidance on clipping
  - optimised use of dynamic recording range
- Signal to noise ratio and channel imbalance
  - incorporate guidance
- Flight test procedures
  - Review and update
- Objective test measurements of recorded audio
- TBC



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# SG4 TRF - GADSS TRFD Equipment

## Background Info SG4

Jun 1<sup>st</sup> 2009      Air France flight 447  
Mar 8<sup>th</sup> 2014      Malaysia Airlines flight 370

since AF447 and MH370, real time data downlink has been suggested

IFALPA reacted in 2011 with the following policy:

### IFALPA POLICY 2

Until such time that the aviation industry is able to guarantee the protection of flight recorders data, IFALPA will remain opposed to the transmission of real-time information from the flight recorders to the ground via data-link or other means.

### POL-STAT 2011

*Reaffirmed by AAP Cttee, Nov 2018*



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# SG4 TRF - GADSS TRFD Equipment

## EU developments

- Active involvement at FD WG level after publication of NPA 2013-26, late 2013.
- By 2016 the Commission discussed related revisions to the Basic Regulation
- Most from the so-called “Marinescu amendments” was avoided but the following text is now in Regulation (EU) 2018/1139 Basic Regulation. Article 30:  
7. Where the implementing acts referred to in point (g) of the first subparagraph of Article 31(1) so provide, aircraft shall be equipped with the necessary safety-related equipment and instruments, certified where required in accordance with the delegated act referred to in point (b)(iii) of Article 19(1), including some or all of the following:
  - (a) flight recorders;
  - (b) means to track the position of the aircraft;
  - (c) means to recover flight recorder data in a timely manner in case of aircraft in distress by relying on real-time electronic communication or other appropriate technical solutions.
- In line with this article EASA launched a Research Tender by June 2020 to investigate options for Quick Recovery of Flight Recorder Data

<https://etendering.ted.europa.eu/cft/cft-display.html?cftId=6651>

**Project Summary:** The over-arching objective of this research study is to identify and assess technical solutions for the automatic wireless data transmission to quickly recover flight recorder data after an accident in a remote land area or an oceanic area for the purpose of faster understanding of the causal and contributory factors of an accident.



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# EASA Tender won by Collins Aerospace

*"We are responding to a request from EASA for a specific innovation study.*

*The goal is to study new potential wireless transmission solutions for quickly recovering flight recorder data.*

*This study may lead to implementation of new regulations in Europe.*

*After a review and analysis of several technical solutions (taking into account current and future technologies),  
2 will be selected for review.*

*Documentation will be prepared to present these solutions with their benefits and limitations.*

***Then we will then organize reviews of documentation and workshops to present to appropriate stake-holders  
these potential solutions.***

***The goal is to balance/challenge these potential solutions versus current flight operations.***

*It is necessary to consult the Association of pilots for reviewing the documentation and for participating in  
workshops with other stakeholders (including Airlines, ANSPs, other authorities in charge of investigating  
accidents*

*There will be 2 workshops to attend and 2 sessions of documentation review.*

*Regarding the schedules of the project (expected to start in January 2021),  
workshops would be envisaged in Septembre-October 2021 and June-July 2022 timeframes.*

*The documentation will be provided 3 weeks before each workshop and the workshops will last one Day each  
for discussing the documentation."*



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# SG5 UAS - Recorder for UAS and RPAS



18POS21

5 December 2018

## UAS Security

One meeting was held to discuss working procedures and SG governance

### Scope of Work

- Gain perspective from various facets of the industry
  - Accident investigator
  - Manufacturer and Installer
  - Regulator
  - Operator
- Performance Requirements, not Carriage Requirements
- Proposal to Consider ANSI UAS Standards Collaborative



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## Other external meetings relevant for FD WG

**CAT-CAG**

**EOFDM**

**ECAC-ACC**

~~SAFE 360 2020~~

~~IFALPA AAP Committee Meeting~~

**Related documents**

[FDM Analysis Techniques and Principles.docx](#)



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**Next Meeting(s)**

