



# EASA

European Aviation Safety Agency

# Product Certification and Design Organisation Approval Workshop

## 22<sup>nd</sup> – 23<sup>rd</sup> November 2017

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TE.GEN.00409-001



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European Aviation Safety Agency

# Typical Categorization of Rotorcraft Flight Tests

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23/Nov/2017

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# OBJECTIVES

- Provide a quick recap on the most significant parts of Appendix XII
- Share the main challenges so far experienced with the application of the new regulations
- Provide the key elements for a correct decision making process in the flight test category determination
- Update the DOAs on the latest EASA initiatives: Rotorcraft FAQ



# Appendix XII

## COMPETENCE LEVELS for FTPs and LFTEs

To determine the appropriate competence level as a function of the FT category and of the A/C class, Appendix XII contains the following table applicable for **Pilots** and LFTEs:

| AIRCRAFT   | Categories of flight test |   |   |   |
|--|---------------------------|---|---|---|
|  | 1                         | 2 | 3 | 4 |
| CS-23 commuter or aircraft having a design diving speed (Md) above 0,6 or a maximum ceiling above 25 000 ft, CS-25, CS-27, CS-29 or equivalent airworthiness codes | 1                         | 2 | 3 | 4 |
| Other CS-23 with an MTOM of or above 2 000 kg  | 2                         | 2 | 3 | 4 |
| Competence level   |                           |   |   |   |



# Appendix XII

## REQUIREMENTS for AIRCREWS

EXAMPLE: Establish the  $V_{MCA}$  on a standard CS23 A/C.  
Which are my Aircrew Requirements?

| AIRCRAFT  | Categories of flight test |   |   |   |
|---|---------------------------|---|---|---|
|   | 1                         | 2 | 3 | 4 |
| CS-23 commuter or aircraft having a design diving speed (M <sub>d</sub> ) above 0,6 or a maximum ceiling above 25 000 ft, CS-25, CS-27, CS-29 or equivalent airworthiness codes | 1                         | 2 | 3 | 4 |
| Other CS-23 with an MTOM of or above 2 000 kg   | 2                         | 2 | 3 | 4 |
| Competence level  |                           |   |   |   |

- **First Step: Establish the Category of Flight Test.**

In this case it is a CAT 1 FT; (Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached);

- **Second Step: Consider the A/C class.**

In this case it is a standard CS23 A/C;

- **Third Step: Determine the minimum competence level of the flight crew.**

In this case the minimum competence level to carry out the flight is 2. So, in this case the PIC must have at least a CAT 2 FTR and the LFTE must have at least the Competence level 2 qualification.

**It is ESSENTIAL to identify CORRECTLY the CATEGORY OF FT**



# Categories of FT

## MAIN CHALLENGES

The correct identification of the Category of a given FT has turned out to be not an easy exercise for some organizations. The main reasons are:

- The Regulation has entered in force relatively recently;
- European countries had in force different rules as far as flight test is concerned. In some countries there were no rules;
- DOAs are responsible for the Classification of FT according to Appendix XII, however, not always their procedures provide exhaustive guidance on how to classify the flight tests;
- Sometimes, there is the tendency to classify the flight tests based on the pilots' availability and not on the classification criteria;



# Categories of FT

## MAIN CHALLENGES (cont.)

- For embodiment of changes to already certified A/C it is often difficult to determine if the FT can be classified as:
  - Cat 1 vs Cat 2 or
  - Cat 2 vs Cat 4.

For example, what should the Category of FT be for a simple aerial installation?



# External Mount and Camera (1/2)







# External Mount and Camera (2/2)





# GUIDELINES FOR PROPER CLASSIFICATION

To carry out a proper classification, it is essential to understand the general principles behind the Category classification concept:

- The concept of addressing Flight Test through the Categories was developed to introduce a **flexible and proportional approach**.
- Assess if the flight can be defined as a FT i.a.w. the “General” para of the rule.
- Always apply a **top down approach**, starting from the criteria used to identify Category 1 FT, until the correct category is determined.

Maintenance check flights are outside the scope of this rule and a dedicated RMT is taking care of these particular type of flights.



# GUIDELINES FOR PROPER CLASSIFICATION (cont.)

- FT of a not yet certified A/C should be considered Cat 1 or 2;
- FT for a modification of an already certified A/C may be Cat 1, 2 or 4;
- A Cat 3 FT (production flight test) can apply only if a TC or STC has been already issued;
- FT which require manoeuvres/conditions which deviate significantly from the **STANDARD OPERATIONAL** use of the A/C should be classified as Category 2 FT;



# GUIDELINES FOR PROPER CLASSIFICATION (cont.)

- A FT that is only aimed to check the good functioning of an equipment can be Cat 4;
- A Cat 4 classification should not be invoked when the a/c is flown outside of the limitations of the AFM/RFM (e.g. above  $V_{NE}$ );
- When a FT requires a global crew procedures assessment it should be classified as Cat 2;
- **In addition, a GM is provided to help understand the definitions but this cannot be regarded as a “*COOKING BOOK*” and an effort is REQUIRED by DOAs to assess each specific case.**

Therefore, going back to the question in slide 7, what do you think the Category of FT should be for a simple installation such as the one presented before?



# Frequently Asked Questions (FAQ)

- EASA has recently prepared a list of frequently asked questions on the flight test classification for rotary wing projects.
- This list is going to be published on the web
- The list is not intended to be exhaustive and will not provide an answer to all the possible questions. However, it takes into account the experience so far acquired by EASA.
- Scope of this document is to provide examples where the principles behind the flight test classification laid down in Appendix XII are explained.



# Frequently Asked Questions (FAQ) (cont'd)

Example 1: installation of avionic equipment with LPV capability on an IFR approved rotorcraft.

- The flight test requires to assess:
  - Correct functioning of the system
  - The human machine interface
  - Crew procedures (limitations, normal and emergency procedures) to account for the introduction of the LPV capability, not available before. The testing final objective is to establish appropriate instructions for the RFM Supplement.
- Therefore, according to the GM to Appendix XII, the Flight Test should be classified as Category 2.



# Frequently Asked Questions (FAQ) (cont'd)

Example 2: installation of a stand-alone HTAWS not integrated with the avionics suite.

- The flight test requires to assess:
  - Correct functioning of the system
  - The human machine interface
  
- Therefore, according to the GM to Appendix XII, the Flight Test should be classified as Category 4.





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# Questions?

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