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Title	In-flight recording for light aircraft
NPA Number	NPA 2017-03

UK CAA (European.Affairs@caa.co.uk) has placed **32** unique comments on this NPA:

Cmt#	Segment description	Page	Comment	Attachments
28	(General Comments)	0	<p>Page No: General</p> <p>Paragraph No: N/A</p> <p>Comment: The UK CAA welcomes and supports the principals behind this comprehensive NPA to introduce flight recording facilities to aircraft that are not yet required to carry such equipment. Analysis by the European Helicopter Safety Team (EHEST) and others has demonstrated the need to improve the recording of information to help accident investigation but the same data can also be used for safety promotion, training and management of aircraft.</p> <p>Alignment with ICAO Annex 6 is also supported for CAT aeroplanes and helicopters but the Impact Assessment as presented raises some concerns, particularly with regard to the inclusion of commercial SPO and we have made comment and alternative options to address this.</p> <p>The promotion of voluntary recording of data for other aircraft not covered by the proposed regulation changes should be actively encouraged throughout Europe.</p>	
29	EXECUTIVE SUMMARY	1	<p>Page No: 1</p> <p>Paragraph No: Executive Summary</p> <p>Comment: The title of this NPA refers to "light aircraft" which is understood but which is a term that is not formally defined. Indeed the only explanation of the terminology appears in Section 4 Impact Assessment at page 43. If it is intended to use these descriptions in the regulations then it would be appropriate for the definitions to appear in 'Annex I Definitions'. Only the similar term European Light Aircraft (ELA 1 or 2) is currently defined but these are not the target aircraft for this NPA. It is suggested that either the accepted term 'other than complex motor-powered aircraft' be used or the explanations of 'Light aeroplane' and Light helicopter' be added to Annex I.</p> <p>Justification: Clarification of terminology to ensure the regulations are pertinent.</p>	
30	2. In summary — why and what — 2.1. Why we need to change the rules— issue/rationale	5	<p>Page No: 5</p> <p>Paragraph No: 2.1</p> <p>Comment: With regards to balloons, the statement "<i>Finally, CAT statistics indicate a significantly higher rate of accidents with balloons compared to aeroplanes and helicopters, which raises the question of the need for in-flight recording on-board balloons with a large passenger capacity</i>" needs to be considered in the right context.</p>	

			<p>There are two significant issues here, which are repeated through this NPA. Firstly, statistical comparison between different types of aircraft, specifically with reference to CAT is not comparing similar types of operations or hazards and risks. Passenger hot-air balloons do not undertake CAT in the true sense of the phrase. The purpose of a hot-air balloon flight is not to travel from “A” to “B” but rather the flight itself. Many of the rule requirements attached to CAT are not appropriate for ballooning. Therefore, the RMT.0674 expert group developed a new category specifically for passenger ballooning called “Commercial Passenger Ballooning” [CPB], which is fully detailed in EASA Opinion 01/2016.</p> <p>Secondly, the risk exposure to passengers in a larger balloon is not necessarily greater than in a smaller balloon. In fact, the opposite applies and stronger baskets with specific passenger compartments and, perhaps, rearwards facing “seats”, offer much greater passenger safety in larger balloon baskets.</p> <p>The proposal to not specifically address any mandatory requirement to equip balloons with flight recorders as in the preferred Option B.1 is fully supported. Similarly to the other alleviated sectors, the benefits should be promoted leading to voluntary fitment of some form of device solely at the discretion of the operator.</p> <p>Justification: Proportionality and work already undertaken by the RMT.0674 expert group in so far as CPB ‘v’ CAT.</p>	
31	2.3. How we want to achieve it — overview of the proposals	6 - 7	<p>Page No: 6</p> <p>Paragraph No: 2.3.1.1</p> <p>Comment: The explanation of why there needs to be new definitions to describe flight recorders in Annex I is appreciated but it might be more appropriate to use the proposed GM at ‘GM16 Annex I Definitions’ to provide a more comprehensive description of the range of equipment, including FDR and CVR, that encompasses recorders meeting the international standards under ED112A and ED155 for example. The new definition of “Flight Recorder” is sufficient supported by the GM which is how it is accomplished in ICAO Annex 6 for instance.</p> <p>Justification: Clarity and simplicity with easier means of amendment in the future as equipment changes.</p> <p>Proposed Text: Add to new GM16 Annex I Definitions</p> <p><i>“Crash protected flight recorders comprise one or more of the following systems: a flight data recorder (FDR), a cockpit voice recorder (CVR), an airborne image recorder (AIR) or a data link recorder (DLR).”</i></p> <p><i>Lightweight flight recorders comprise one or more of the following systems: an aircraft data recording system(ADRS), a cockpit audio recording system (CARS), an airborne image recording system (AIRS) or a data link recording system (DLRS).”</i></p>	
32	2.3. How we want to achieve it — overview of the proposals	6 - 7	<p>Page No: 6</p> <p>Paragraph No: 2.3.1.2</p> <p>Comment: In this section, the EUROCAE standard ED112 is</p>	

			<p>introduced which also appears elsewhere. Whilst this is an accepted standard it has been superseded by ED112A and as the proposed regulations will affect new aircraft in the future it is recommended that this standard be applied throughout where otherwise ED112 is mentioned.</p> <p>Justification: Application of current standards to new aircraft</p> <p>Proposed Text: Replace ED112 with ED112A wherever mentioned.</p>	
33	2.4. What are the expected benefits and drawbacks of the proposals	8 - 9	<p>Page No: 8</p> <p>Paragraph No: 2.4.1</p> <p>Comment: The preferred option A.4 for aeroplanes and helicopters is <u>not</u> supported.</p> <p>Whilst the promotion of the use of flight recorders under Option A.1 is supported, the extension within Option A.3 to include commercial SPO aeroplanes and helicopters is not considered to have been adequately justified within the Impact Assessment and should not be adopted.</p> <p>Aligning the Ops Rules with ICAO Annex 6 for CAT aeroplanes and helicopters together with the proposed changes is acceptable . Therefore it is strongly recommended in light of this that revised options A.3A and A.4A as shown below are adopted. When experience and better justification can be realised together with more proportionate modification schemes under CS-STAN then perhaps the inclusion of commercial SPO aeroplanes and helicopters might be re-considered.</p> <p><u>The preferred option should now be Option A.4A.</u></p> <p>Justification: Capturing aircraft that may be used for commercial SPO and requiring them to meet the same requirements as for CAT has not been fully justified when considering the additional costs against the likely benefits. This additional need for FR equipment will have a significant financial impact on commercial SPO operators and they should remain covered by the benefits expected by Option A.1 alone at this stage.</p> <p>Proposed Text: Amend Options to include:</p> <p><i>“Option A.3A: Transpose ICAO Standards in Annex 6 with some differences:</i></p> <ul style="list-style-type: none"> · <i>include aeroplanes which have an MOPSC of more than 9; and</i> · <i>do not require the recording of audio.</i> <p><i>Option A.4A: Implement Options A.1 and A.3A together.”</i></p>	
34	3. Proposed amendments and rationale in detail — 3.1. Draft Regulation (Draft EASA opinion) — 3.1.1. Draft resulting text — 3.1.1.1. Annex I (Definitions)	10	<p>Page No: 10</p> <p>Paragraph No: 3.1.1.1</p> <p>Comment: As previously mentioned in the comment against 2.3.1.1, it is recommended that the new definitions for FDR and CVR be removed and placed in a modified “GM16 Annex 1 Definitions”. This reflects the method of description in ICAO Annex 6 and seems more flexible and comprehensive.</p> <p>Justification: Better explanation of all the terms used within the</p>	

			context of Flight Recorders and alignment with ICAO. Proposed Text: As shown in previous comment against 2.3.1.1.	
35	SUBPART D — SECTION 1 — CAT.IDE.A.191 Recording of flight parameters on light aeroplanes	12 - 13	Page No: 12 Paragraph No: CAT.IDE.A.191 Comment: The use of the term 'light aeroplane' needs to be defined, as previously mentioned in comment against page 1 'Executive Summary', or replaced with the accepted and defined term of 'other than complex motor-powered aeroplane'. This comment is equally applicable to the proposed CAT.IDE.H.191 and associated AMC/GM. [This would also be applicable to SPO.IDE.A.146 and SPO.IDE.H.146 if retained]. Justification: Clarity of terminology. Proposed Text: See previous comment for Page 1 'Executive Summary'	
36	SUBPART D — SECTION 1 — CAT.IDE.A.191 Recording of flight parameters on light aeroplanes	12 - 13	Page No: 12 Paragraph No: CAT.IDE.A.191 Comment: There is no mention of requiring a location device for the Flight Recorders as detailed in CAT.IDE.A.190(e), for instance, for non-deployable ones. Under ICAO Annex 6, FRs should have location devices fitted individually whether deployable or not. It is not clear if this is an oversight or an intentional difference from the ICAO standard. The same comment is equally relevant to the proposal for CAT.IDE.H.191, SPO.IDE.A.146 and SPO.IDE.H.146 and should be resolved. Justification: Consistency and compliance with ICAO Annex 6	
37	SUBPART D — SECTION 1 — CAT.IDE.A.191 Recording of flight parameters on light aeroplanes	12 - 13	Page No: 13 Paragraph No: CAT.IDE.A.191 (e) Comment: Within the new regulations, there is an erasure function intended for when any images are recorded by the 'flight recorder'. This is important but so too is the prevention of intended or unintended in-flight erasure and the retention of such recordings until the aircraft is on the ground and in particular during any crash sequence. Amendments to ICAO Annex 6 propose suitable text that could be added to the new rule to accommodate this function. However, erasure functions are not normally applicable to FRs collecting parametric data and this should be carefully considered. This recommendation is equally applicable to the proposed CAT.IDE.H.191(e). [This would also be applicable to SPO.IDE.A.146(e) and SPO.IDE.H.146(e) if retained]. Justification: To ensure the prevention of loss of recordings during normal operation and during accident sequences. Proposed Text: Add new sentence at the end of sub-para (e)	

			<p>“.....or copying techniques. The erasure function shall be designed to prevent activation during flight and minimize the probability of an inadvertent activation during an accident.”</p>	
38	<p>3.1.1.3. Annex VIII (Part-SPO) — SUBPART A — SPO.GEN.145 Handling of flight recorder recordings: preservation, production, protection and use — operations with complex motor-powered aircraft</p>	14 - 15	<p>Page No: 14 and 31</p> <p>Paragraph No: 3.1.1.3 and 3.2.1.4</p> <p>Comment: In view of UK CAA proposed Options A.3A and A.4A, delete all references to Part-SPO.</p> <p>Justification: Proportionality and balance of benefits.</p>	
	<p>3.2.1.4. Draft AMC & GM to Part-SPO (Annex VIII) — AMC1 SPO.GEN.145(b) Handling of flight recorder recordings: preservation, production, protection and use</p>	31 - 32		
39	<p>SUBPART D — SECTION 1 — SPO.IDE.A.146 Recording of flight parameters on light aeroplanes</p>	16	<p>Page No: 16</p> <p>Paragraph No: SPO.IDE.A.146(a)(2)</p> <p>Comment: If retained and in the context of the section, it is suggested that the sentence is re-phrased to ensure clarity of the type of operations being conducted.</p> <p>Additionally, the next sub-paragraph is also numbered (2) which should be changed to (3).</p> <p>Justification: Clarity of intent.</p> <p>Proposed Text: Amend (a)(2) to read:</p> <p>“(2) they are commercially-operated conducting commercial operations; and”</p>	
40	<p>SECTION 2 — SPO.IDE.H.146 Recording of flight parameters on light helicopters</p>	16	<p>Page No: 16</p> <p>Paragraph No: SPO.IDE.H.146(a)(2)</p> <p>Comment: If retained and in the context of the section, it is suggested that the sentence is re-phrased to ensure clarity of the type of operations being conducted.</p> <p>Justification: Clarity of intent.</p> <p>Proposed Text: Amend (a)(2) to read:</p> <p>“(2) they are commercially-operated conducting commercial operations; and”</p>	

41	GM1 CAT.IDE.A.191 Recording of flight parameters on light aeroplanes	29	<p>Page No: 29</p> <p>Paragraph No: GM1 CAT.IDE.A.191</p> <p>Comment: It is recommended that further information is added explaining that other parameters, as detailed in the relevant ED112A or ED155 standard, or equivalent, be recorded when the equipments is capable of doing so over and above the minimum set out in the AMC.</p> <p>This is equally valid for GM1 CAT.IDE.H.191, [and GM1 SPO.IDE.A.146 and GM1 SPO.IDE.H.146 if retained].</p> <p>Justification: To promote the recording of wider parameters than the bare minimum when the equipment being used is capable.</p>
42	SECTION 2 — AMC1 CAT.IDE.H.191 Recording of flight parameters on light helicopters	29 - 30	<p>Page No: 29/30</p> <p>Paragraph No: AMC1 CAT.IDE.H.191</p> <p>Comment: It is strongly recommend that the helicopter main rotor speed be recorded in both section (b) and (c) parameters.</p> <p>Justification: Helicopter main rotor speed is essential information when determining the flight profile of the helicopter.</p>
43	SECTION 2 — AMC1 CAT.IDE.H.191 Recording of flight parameters on light helicopters	29 - 30	<p>Page No: 30</p> <p>Paragraph No: AMC1 CAT.IDE.H.191(c)</p> <p>Comment: This text appears to have been copied from the aeroplane section but has not been adapted to helicopters.</p> <p>Justification: Editorial.</p> <p>Proposed Text: Amend to as follows:</p> <p>“(c) If the flight recorder records images, it should capture views of the main instrument displays at the pilot station, or at both pilot stations when the aeroplane helicopter is certified for operation with a minimum crew of two pilots. The recorded image quality should allow reading the following indications during most of the flight:”</p>
44	SECTION 2 — AMC1 SPO.IDE.H.146 Recording of flight parameters on light helicopters	35 - 37	<p>Page No: 35/36</p> <p>Paragraph No: AMC1 SPO.IDE.H.146</p> <p>Comment: If retained, it is strongly recommended that the helicopter main rotor speed be specifically recorded in both section (b) and (c) parameters.</p> <p>Justification: Helicopter main rotor speed is essential information when determining the flight profile of the helicopter.</p>
45	SECTION 2 — AMC1 SPO.IDE.H.146 Recording of flight parameters on light helicopters	35 - 37	<p>Page No: 36</p> <p>Paragraph No: AMC1 SPO.IDE.H.146(c)</p> <p>Comment: This text appears to have been copied from the aeroplane section and, if retained, should be adapted for helicopters.</p> <p>Justification: Editorial.</p>

			<p>Proposed Text: Amend as follows:</p> <p>“(c) If the flight recorder records images, it should capture views of the main instrument displays at the pilot station, or at both pilot stations when the aeroplane helicopter is certified for operation with a minimum crew of two pilots. The recorded image quality should allow reading the following indications during most of the flight:</p>	
46	4.1.2. Safety risk assessment	50 - 61	<p>Page No: 52</p> <p>Paragraph No: Text below 4.</p> <p>Comment: This paragraph states: <i>“When applying the proportionality across categories of aircraft and types of operations the following approach is proposed:</i> <ul style="list-style-type: none"> · <i>The target level of equipment should be higher for commercial operations and lower for non-commercial.”</i> For CAT this may be justifiable and aligns with ICAO Annex 6, but sufficient justification has not been presented to include commercial SPO. Therefore the presumption that light aeroplanes and helicopters for such operations be fitted with FRs is not proven.</p> <p>Justification: Proportionate evidence has not been provided to include commercial SPO in the proposed regulations. The Impact Assessment does not adequately substantiate the safety need or benefit for extending the requirement beyond CAT light aeroplanes and helicopters.</p>	
47	4.1.2. Safety risk assessment	50 - 61	<p>Page No: 57/58</p> <p>Paragraph No: Last bullet of 1</p> <p>Comment: This paragraph summarises the perceived benefit of recordings against noted corrective actions. The information, as presented, does not appear to provide strong evidence of the safety benefits to support any change to the regulations. However, in Annex E under 7.5.3.2 and 7.5.5.2 the note below is shown:</p> <p><i>“Note: There is no obligation (or even guidance) to specify, when writing an investigation report, whether the information obtained from a recording was useful to establish a given corrective action. In addition, corrective actions generally relate to several significant events and factors that are established based on the analysis of several sources of data. It is then difficult to assess a posteriori the contribution of a given recording to the identification of corrective action.”</i></p> <p>This is an important point and one which should be developed more comprehensively to contextualise the findings and explain the limitations of analysing such accident reports especially as the style and nature of such reporting across Europe has had wide variation and depth. Further justification for any change, particularly with regard to the inclusion of commercial SPO, should then be made to substantiate any decisions.</p> <p>Justification: Clear and substantiated argument for justifying the change to the regulations and the preferred options.</p>	
48	4.1.4. How could the issue/problem evolve	62 - 63	<p>Page No: 63</p> <p>Paragraph No: 2, beginning ‘One should also not rely ...’</p>	

			<p>Comment: There would be significant benefit if a way could be found, and specifications developed, that would enable accident investigators to retrieve data from cameras, GNSS devices, smartphones etc and EASA/MS CA's should engage with manufacturers to seek to find a equitable solution. This should be promoted.</p> <p>Justification: More proportionate and wider availability of recorded information useful to accident investigations or operator use. In GA there is a greater chance of one of these facilities being used on-board an aircraft during flight.</p>	
49	4.3. How it could be achieved — options — 4.3.1. Requiring, facilitating or promoting	64 - 65	<p>Page No: 64</p> <p>Paragraph No: 4.3.1.1.</p> <p>Comment: The ability for a voluntary installation of FR equipment to be conducted under CS-STAN is fully supported.</p> <p>Justification: Proportionality.</p>	
50	4.3. How it could be achieved — options — 4.3.1. Requiring, facilitating or promoting	64 - 65	<p>Page No: 64</p> <p>Paragraph No: 4.3.1.2.</p> <p>Comment: The establishment and promotion of the benefits of FR equipment for all operators is fully supported.</p> <p>Justification: Improvement in safety and better understanding of the cost effective use of aircraft.</p>	
51	4.5. What are the impacts — 4.5.1. Safety impact	70 - 75	<p>Page No: 70/71</p> <p>Paragraph No: Option A.1</p> <p>Comment: This option recognises the limiting factors of promoting in-flight recording and suggests a "fit and forget" approach should be possible which is supported. This proposal has reached a slightly positive impact which seems appropriate.</p> <p>Justification: Proportionate/better regulation principles</p>	
52	4.5. What are the impacts — 4.5.1. Safety impact	70 - 75	<p>Page No: 72</p> <p>Paragraph No: Last bullet on page</p> <p>Comment: There appears to be an error in the Annex 6 Part III references in the final sentence which may have been copied from the earlier bullet related to aeroplanes.</p> <p>Justification: Accuracy</p> <p>Proposed Text: Amend "6.3.1.2.1" in final sentence to read '4.3.1.2.4'.</p>	
53	4.5. What are the impacts — 4.5.1. Safety impact	70 - 75	<p>Page No: 73</p> <p>Paragraph No: Option A.3</p> <p>Comment: The scale used for ranking the impacts is given as -5 to +5 but there is no indication of the percentage of an issue that would represent a very positive/negative impact. Whilst the suggestion is that 16% more aeroplane accidents would be captured if this option had been implemented, based on a scale of -5 to +5 it</p>	

			<p>is not clearly explained how 16% can be considered to be 'slightly to medium positive'.</p> <p>Justification: If not fully justified this would tend to support the promotion and voluntary installation of FR rather than mandatory installation.</p>	
54	4.5.3. Social impact	76 - 78	<p>Page No: 76</p> <p>Paragraph No: 4.5.3 Option A.0</p> <p>Comment: There is no assessment on the social impact yet the expectation is that it will be, and therefore is, neutral.</p> <p>Justification: There should be an assessment and a conclusion.</p>	
55	4.5.4. Economic impact	78 - 86	<p>Page No: 78</p> <p>Paragraph No: 4.5.4 Option A.0</p> <p>Comment: There is no assessment on the economic impact yet the expectation is that it will be, and therefore is, neutral.</p> <p>Justification: There should be an assessment and a conclusion</p>	
56	4.5.4. Economic impact	78 - 86	<p>Page No: 78/79</p> <p>Paragraph No: 4.5.4 Economic Impact Option A.1</p> <p>Comment: This section states that "in only half of the cases where test and research were performed would a limited set of flight parameters (...) be sufficient to avoid performing test and research". In other words, this says that in 'only half' i.e. 50% of cases it would avoid the need for test and research and this only results in a 'slightly positive' expectation, yet under the safety impact assessment a result of 16% produced a 'slightly to medium positive' conclusion.</p> <p>Justification: More information on the percentages associated with the scale used is needed to ensure consistent application.</p>	
57	4.5.4. Economic impact	78 - 86	<p>Page No: 81/82</p> <p>Paragraph No: Table 11</p> <p>Comment: As it remains unknown whether the installation of FR equipment will require a major mod, a minor mod or can be done as a standard change, the economic impact remains unknown and may potentially be significant. The summary in Table 13A indicates that whilst there is a slightly positive impact for (+1) for Authorities, there is a greater negative impact on industry.</p> <p>As the reduction in fatalities is estimated to be moderate and the anticipated increase in the number of accidents captured is only 16%, this would support the promotion of voluntary installation especially for commercial SPO.</p> <p>Justification: Proportionality</p>	
58	4.5.5. General aviation and proportionality issues	87 - 89	<p>Page No: 87</p> <p>Paragraph No: 4.5.5.1 Option A:3</p> <p>Comment: This imposes a significant financial burden on CAT and</p>	

			<p>particularly commercial SPO operators using 'light aircraft'. It is difficult to see how the impact of this can be considered to be neutral.</p> <p>Justification: Capturing aircraft that may be used for commercial SPO and requiring them to meet the same requirements as for CAT is not warranted. The adoption of the proposed Options A.3A and A.4A are strongly promoted.</p>	
59	4.5.6. Impact on better regulation and harmonisation	89 - 93	<p>Page No: 91</p> <p>Paragraph No: 4.5.6.1 Option A.3</p> <p>Comment: The impact of option A.3 is stated to be slightly positive as it introduces less complexity into the regulations for aeroplanes. However, the overall impact might be better addressed as 'neutral' when considering harmonisation with ICAO and the other effects. Proposed Option A.3A supports a more proportionate approach.</p> <p>Justification: The Impact Assessment should accurately reflect the current situation and the effects of the proposed changes in a proportionate way.</p>	