EASA Proposed CM-ES-002 Issue 01 – Electrical Wiring Interconnection System Instructions for Continued Airworthiness - Comment Response Document

Comment				Comment summary	Suggested resolution	Comment is an observation or is a suggestion	Comment is substantive or is an objection	EASA comment disposition	EASA response
NR	Author	Section, table, figure	Page						
1	*British Airways Plc.*			The flowcharts in AC 25-27A were designed for the major modification case and are inappropriate for minor modifications and especially repairs. Temporary repairs to wiring are the most critical case. A strict application of the proposed guidance material could not avoid answering yes to box 1 of the flowchart and this leads unavoidably to a need for a full EZAP analysis, the most time consuming aspects of which are the need to review existing ICA for the affected zones and complete the EZAP worksheets. The need for such repairs frequently arises when the aircraft is close to its scheduled departure time, occasionally with passengers boarded and ready to depart. Ensuring that the aircraft is safe for the departure is of course the most vital consideration in this situation but any delays in achieving this incur cost and inconvenience to the passengers and air traffic management system so anything that does not contribute to safe operation is unwelcome.				Partially Accepted	A repair under Part 21 Subpart M requires design activity according to 21.A.431 A. Section 21.A.433 implies amongst others that a repair design complies with the TCDS of the type. Like for design changes, repairs are classified as Minor or Major. As the repair has to comply with applicable airworthiness requirements it has to comply with CS 25.1729 or SC H-01 as according to the TCDS. Obligations towards the Instructions for Continued Airworthiness in the context of a repair design are laid down in Part 21, 21.A.449. This paragraph allows the release into service before the ICA are finalised under conditions listed in this paragraph. When the Flowchart in Appendix B of AC 25-27 Issue A is followed, and if the company is not the TCH, in general it does not guide you towards completing the EZAP Worksheets (i.e. those presented in Appendix A of AC 25-27A). The whole analysis in this case can, in general, be done completely with the Flowchart in Appendix B of AC 25-27A. Any maintenance activities, and as such not being repairs, will be carried out according to the applicable instructions of the TC or STC holder. Section 3.1 will be amended to reflect this more clearly.
2	*British Airways Plc.*			An EZAP analysis would be justified if the repair: Introduces new combustibles or contaminants to the zone; or Increases the negative effects of a fire in the zone by introducing flammable vapours or other combustibles; or Adds power feeder EWIS or other high current carrying EWIS, or critical airplane system EWIS to the zone where previously there was none or Installs or modifies existing EWIS that results in the EWIS being located within 2 in / 50 mm of BOTH primary AND backup hydraulic, mechanical or electrical flight controls; or Increased the density of the zone. In reality, none of these considerations is remotely likely to be true in our despatch scenario so making the passengers wait until we complete the EZAP worksheets contributes nothing but delay and stress (not conducive to safe operation) to the eventual departure. It certainly does not contribute to safety.				Partially Accepted	See response to comment number 1.

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3	*British Airways Plc.*			The situation is similar, but less time critical, for minor modifications. The classification criteria in 21A.91 and its AMC mean that the factors outlined above, which would drive the need for revised ICA, are simply not encountered for minor changes in practice. Consideration and substantiation in respect of 25.1729 can of course be included in the showing of compliance, but again the need to complete the full EZAP worksheets in every case wastes precious time and resource while adding nothing to safe operation. This disproportionate emphasis on EZAP could also be a distraction from consideration of other aspects of the showing of compliance and ensuring that the change is safe.				Noted	The possible need for a change of EWIS ICA is not a driver for the classification of the change (see also FAQ on EWIS ICA on the EASA website). If the Special Condition H-01 is in the TCDS, the Special Condition also applies to Minor Changes. For the impact analysis of the change on the EWIS ICA the Certification Memorandum advices strongly to use the Flowchart in Appendix B of AC 25-27 Issue A. If the applicant follows this flowchart, it is unlikely that the full EZAP worksheets are to be used (the worksheets are in Appendix A of AC 25-27 Issue A.)
4	*British Airways Plc.*			Some additional considerations: - Wiring repairs are invariably of a temporary nature. - EZAP inspections are performed during heavy maintenance inputs whereas repair activity occurs during service between such inputs. Repair activity is not therefore relevant to EZAP inspections. - If there is a specific need to perform inspections of the repair, existing requirements result in these being specified in the repair, independently of the zonal inspection regime, and at a much shorter interval than any EZAP inspection. - We do not perform repairs of such an extensive nature that they would influence the inspection requirements of a zone. - Minor mods do not introduce wiring to the extent that the outcome of an existing EZAP analysis would be altered. - None of the incidents which led to the development of EZAP and subpart H were the result of minor mods or repairs, and such an outcome is exceptionally unlikely.				Noted	See response to comment number 1. The exclusion of repairs in general would not be beneficial in the end to the continued airworthiness of aeroplanes.
5	*Cessna Aircraft Company*			Cessna Aircraft Company has no comment on this issue at this time.				Noted	
6	*Sabena technics BOD – Certification office*		all	Sabena technics fully support this CM		Yes	No	Noted	
7	*Sabena technics BOD – Certification office*	Appendix, Flowchart 1, Page3	13/15	A recent analysis strictly following the FAA AC 25-27A has been requested to be corrected by EASA specialists because they had a different interpretation of the Box 20 of the flowchart. In fact they consider that the words "Restoration (cleaning)" should not be written in that Box 20 at this step. Since this box is a question box, a different interpretation of its content has a direct impact on the "Yes/No" answer.	The EASA specialists comments, interpretation, guidance on the FAA AC 25-27A flowchart boxes should be listed in a table included in this CM.	No	Yes	Accepted	EASA acknowledges that this error is inside this flowchart. However, we are in continuous discussion with the FAA on the topic of EWIS and EZAP in order to have as much harmonisation as possible between our two systems. As such we do not want to change the flow chart alone, as this will no longer be harmonized. Some extra guidance in the general comments in section 3.1.2 is given to cover this point.

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8	*Sabena technics BOD – Certification office*	§ 3.1.2	8/15	Do no agree with the text of the 4th bullet of the 1st paragraph: "This only concerns STCs / Repairs and Major Changes to STC where the affected aeroplane has a maximum type-certificated passenger capacity of 30 or more or a maximum payload capacity of3402 kg (7500 pounds) or more." Repairs are not called in the SC H-01. CRI H-01 calls for the rules for design changes 21A.16B (a)(3), 21A.103(a)(2)(iii) (plus 25.1529 & Appendix H) whereas repairs are relevant from Part21 subpart M repair design articles.	Remove the word "Repairs" from that sentence.	No	Yes	Accepted	The text has been modified accordingly.
9	*Sabena technics BOD – Certification office*	§ 3.1.2	8/15	Repair design is not called by AMC 20-12. Paragraph title should be modified.	Proposed title: 3.1.2. Major Change ~~/ Repair~~, Minor Change ~~/ Repair,~~ STC	No	Yes	Not Accepted	This Certification Memorandum provides additional guidance as stated in subsection 1.1. When the TCDS includes SC H-01, thereby introducing CS 25.1701 and CS 25 Appendix H paragraph H25.5 and AMC appendix H25.5 paragraphs 1 and 6 in the certification basis, it is also applicable to design activities needed for a repair according to Part 21.A.433.
10	*Sabena technics BOD – Certification office*	§ 3.1.2	8/15	Minor changes are not covered by FAA AC 25-27A nor Part 26 §26.11. EWIS is now included in aircraft EASA TCDS, if an assessment of the impact of a minor change on the existing EWIS ICA is requested by EASA, it should be clearly mentioned in the CM.	Proposed paragraph: For <u>any</u> change design an assessment of its impact on the EWIS ICA shall be shown.	No	Yes	Not Accepted	The Certification Memorandum only uses the flowchart in Appendix B of AC 25-27A, and does not refer to FAA Part 26 §26.11. If SC H-01 is included in the Aircraft TCDS, it makes requirement CS 25.1701 and CS 25 Appendix H paragraph H25.5 and AMC appendix H25.5 paragraphs 1 and 6 applicable. For a change or repair, regardless of the classification, these requirements should be assessed and if deemed necessary compliance should be shown.
11	*Sabena technics BOD – Certification office*	§ 3.1.2	8/15	Minor change re-classification when EWIS ICA is impacted.	With reference to minor change definition per 21A.91, a minor change design having an impact on the EWIS ICA shall be re-classified as a major change	Yes	No	Not Accepted	See EASA website FAQ on EWIS ICA: "By principle, the classification of the change is driven by Part 21.A.91. The fact that EWIS ICA may be revised is not in itself a driver for the classification. It must be noted that for FAR Part 26 compliance, the FAA requires that if the change needs a revision to the previously developed and approved EWIS ICA, then the revised EWIS ICA must be submitted to the foreign CAA (for non-US products) for approval, independently of the minor/major change classification."
12	*ADSE*			In the CM we miss the consequences for existing electrical systems; focus is only on new or modified EWIS.				Noted	With regard to existing EWIS the TCHs were required the action to perform EZA and produce EWIS dedicated ICA for their products. All TCHs have already closed these exercises and therefore no need to discuss this in the current Certification Memorandum.
13	*ADSE*			In flowchart 1, box 1, bullet 4, it is stated: 'Introduce the possibility of new contaminants or combustibles in the zone'.	The following text could be added: 'Introduce the possibility of degrading the functionality of existing electrical components'			Not Accepted	The aim of the question as it is currently is to examine whether a design change introduces a source of contaminants or combustibles that could have an adverse effect on (existing) wiring. It actually implies that even if all other questions in this box are answered with "no", and this question with "yes", one has to go through the impact analysis flow chart and determine if revised / new EWIS ICA are needed. The text is thus aiming at the proposed addition.

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14	*ADSE*			An additional threat is "EMC", e.g. due to EWIS deterioration, or new threats such as PED's in cabin or cargohold, or shielding deterioration or grounding interruption due structural changes from metal to composite. Maybe not a pure EWIS issue, but to be considered nonetheless.				Noted	Introducing all kinds of possible threats is outside the scope of this Certification Memorandum; this is part of an actual EZAP or impact to existing EWIS ICA analysis. The Certification Memorandum however is not discussing the technical details of such an analysis.
15	*ADSE*			Further down the flow chart focus is mainly on EZAP and on fire hazard. One would also expect guidance on achieving the correct separation for signal wires for redundancy (ref Qantas A380 uncontained engine failure), EMC and heat avoidance. Especially in modifications it is often too easy to attach new or modified EWIS to existing EWIS leading to segregation (EMC), separation or heat hazards.				Noted	The Certification Memorandum is not covering guidance on how to design a proper electrical installation. It is only putting out some additional guidance to the existing requirements and available AMC material on an acceptable mean to assess if new or revised EWIS ICA are needed. The original EZAP refers to fire hazard, and as such this comes back in the impact assessment for design changes and repairs. The hazards in the comment should already been accounted for during the design of the change / repair.
16	*UK CAA*			Please note that there are no comments from the UK CAA on the above referenced document.				Noted	
17	*ENAC – Carlo G. Muscatello*			As PCM for DC8-DC9/MD80 and Bombardier/Canadair airplanes I was involved in many EASA STC certification project since EASA EWIS requirement went up. As a general rule I was applying EASA CRI/SC H-001 (when applicable according to pax no. or payload) and recently, for Canadian CL415, I discovered as well that due to Restricted or Utility Canadian certification EWIS requirement are not applicable, through some e-mail exchanges with EASA certification personnel. Md. Carla Iorio could provide additional references if needed.	So my suggestion is to add to paragraph 3.1.2 if EASA policy is still to retain and confirm pax no. and/or payload concepts as well as Restricted or Utility original certification concepts as above.			Noted	This Certification Memorandum is providing additional guidance on how to comply with existing rules, and no intention to change the rules.
18	*ENAC – Carlo G. Muscatello*			Another aspect which should be considered in the CM is the EASA STC issued with EWIS impact for Large Aeroplanes already EASA validated which may have a different CB from CS25. I consider the EASA CRI/SC H-01 still applicable even if the European STC applicant is offering also e.g. compliance to FAR25 amdt. 123	A statement on the CM on this is appreciated – as well as consideration about TCCA or Brazilian position on the subject should be highlighted on the CM.			Noted	If the SC H-01 is not in the TCDS, and the TCDS is not CS 25 at amendment 5 or up, the SC H-01 should be brought into the certification or validation project via a dedicated CRI.