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1	Rolls-Royce	1.1 & 3.2	3	The references (Table 1) only lists the latest (at time of CM draft issue) amendment numbers of both CS-E and CS-25 Whilst this might work for new TCs that require the latest requirements to apply, the vast majority of Major and Minor Changes/Repairs, will need to apply the applicable agreed Certification Basis (at the time of certification), which in many cases will be earlier amendments of CS-E and CS-25. It is noted that Subpart H did not exist in the initial issue of CS-25 and therefore this CM appears to be potentially applying later regulations to Major/Minor design changes and repairs, which will not have complied with Subpart H	Remove CS-E and CS-25 amendment number and issue date from Table 1 (even if the intention is to refer to the latest amendment number it will immediately be out-of-date, i.e. CS-25 amendment 23 (dated 16th July 2019) has been issued since the draft CM was released on ballot Remove reference to Major/Minor design changes and repairs are removed from the section 1.1 scope (and making sure section 3.2 remains consistent) since the CM is targeting new TCs (including derivatives), which then defines the agreed Certification Basis to be applied thereafter	Yes	Yes	Not agreed	Although it's understood that new certifications can use the 21.101 requirements apply for earlier requirements, the CM is intended to provide guidance on current requirements. When discussing the Certification Basis for new changes or derivative models, it can be discussed in which way the contents of this CM needs to be addressed, and any changes applied should be agreed in a CRI.
2	Rolls-Royce	1.2 & Appendix 1 (25.1703)	3 & 3-4	It is unclear to me why only CS-E 650 Vibration Surveys and CS-E 740 Endurance Test have been singled out - surely all of the Type Approval Tests need to consider EWIS if part of engine certification	Clarify why CS-E 650 and 740 have been highlighted or refer to SUBPART E — TURBINE ENGINES: TYPE SUBSTANTIATION	Yes	No	Not agreed	CS-650 and CS-740 are considered to have potential for overlap in requirements regarding EWIS. Other requirements that might be related are also mentioned, i.e. E20, E30, E70 and E170 This CM is intended as Guidance, not limiting the applicants to take other areas into account.
3	Rolls-Royce	3.1	4	Appendix 1 and Table 1 are not clearly labelled	Clearly label/title Table 1 and Appendix 1	Yes	No	Agreed	modified
4	Rolls-Royce	3.1	4	Documenting EWIS compliance (as part of engine certification) in the Installation Manual does not allow ready visibility for subsequent foreign engine validations and foreign (non-CS-25) aircraft certifications and could therefore hamper compliance read-across and may result in duplication, which the CM seeks to eliminate	Compliance with CS-25 Subpart H should be recorded in the engine TCDS to ensure foreign engine/aircraft authority recognition and acceptance	Yes	No	Not agreed	It's the aircraft applicant's responsibility to ensure all aircraft requirements are properly addressed. This guidance is intended to support this. In case the product needs validation to other airworthiness requirements than CS-25 / CS-E this needs to be addressed separately. It may indeed need duplication that we try to avoid within the EASA requirements
5	Rolls-Royce	Appendix 1	3+	The applicability statements (column 4) address some but not all the identified CS-E content (column 3), also the CS-E content and Applicability statements are not always consistent, e.g. 25.1707(b) on page 7 refers to CS-E 80(2)(b) in column 3 but CS-E 80 in column 4	Having identified specific CS-E content in Appendix 1, the Applicability Statement column should address each of those that have been identified	Yes	No	Noted	References updated
6	Rolls-Royce	Appendix 1	multiple	Requirements not applicable to engine certification are not consistently addressed by the Applicability Statement - some says "N/A", some "Aircraft level requirement" and others not definitively clear, e.g. 25.1705(g) and (h))	Where Appendix 1 states; "not applicable to engines", it should be consistently clear who therefore has responsibility for demonstrating compliance, in the Applicability Statement	Yes	No	Noted	If not applicable, it's not expected from the engine manufacturer to address this.

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7	Rolls-Royce	Appendix 1	multiple	Frequently refers to: "Typical Installation" and "Typically" - surely the final interpretation of the Applicability Statement must be based on the actual (not typical) engine type design and the airframe installation	Clarify the use of the words: "typical" and "typically" in Appendix 1, so that each Applicability Statement is correctly interpreted by the reader/engine TC holder	Yes	No	Agreed	Text rephrased
8	Rolls-Royce	Appendix 1 CS 25.1705	5	The systems entirely within the engine type design are considered to be suitably addressed by CS-E to meet the requirements of CS 25.1705 “Systems and functions; EWIS” . (e.g. CS-E 80 requires the equipment identified to be approved as an integral part of the Engine and to meet the relevant specifications of CS-E). Interfaces to the aircraft need to be addressed by the Airframer. Only assessments of those systems that are formed by parts of the engine type design together with parts of the aircraft type design should be addressed by the Airframer.	Include CS-E as engine certification requirements covering at engine level the intent of the CS 25.1705. Leave under the CS-25 applicant responsibility the engine installation aspect and the assessment of systems comprising of parts of the engine type design and aircraft type design.	Yes	No	Agreed	Instead of N/A it’s actually to check if any other CS-E requirement would be relevant for EWIS. The compliance of EWIS towards CS 25 Subpart H does not imply other system requirement to be no longer applicable. Statements changed
9	Rolls-Royce Rolls-Royce	Appendix 1 25.1707(i)	12	25.1707(i) states: "In case control cables and EWIS components are arranged close together, this should be taken into account" - it is not clear who needs to take this into account, the airframe manufacturer? or the engine manufacturer?	Clarify the responsibility in Appendix 1 Applicability Statement	Yes	No		End responsibility is assumed to be on the aircraft TC holder
10	Rolls-Royce	Appendix 1 25.1713(a)	15	Whilst it states; "CS 25.831(c) requires that the effect of EWIS component combustion on cabin air quality. Combustion of engine EWIS components cannot contaminate the pressurised aircraft cabin bleed supply and so this requirement is not applicable" - rather than given, shouldn't this conclusion be an output from the safety assessment under CS-E 510?	Clarify if the conclusion regarding EWIS component combustion effects on cabin air quality is an EASA given or should be derived/concluded by the engine TC holder for the specific engine design/installation?	Yes	No	Agreed	Text changed, including CS-E 510 SA
11	Rolls-Royce	Appendix 1 CS 25.1725(a)	21	The Applicability Statement refers specifically to wing mounted engines, so does not recognise engines may be fuselage/tail mounted	The wording related to the engine installation on the wing should be broadened to include tail/fuselage mounted engines	Yes	No	Agreed	*rephrased accordingly* *Fuselage mount added*

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12	Rolls-Royce	Appendix 1 Appendix H 25.5	22	AMC Appendix H 25.5, AMC 20-21 and CM-ES-002 detail Instructions for Continued Airworthiness applicable to EWIS maintenance and inspection requirements, based on an enhanced zonal analysis procedure (EZAP). It is understood, based on FAA statement (Federal Register Volume 72, No. 216-H), that the enhanced zonal analysis procedure is performed at the aircraft level by the airframer, i.e. engine manufacturer support is not required for either existing or future certification programs	It would be beneficial if EASA clarified their position on this understanding in Appendix 1 Applicability Statement	Yes	No	Noted	Engine manufacturer may be asked to contribute, which is normally the case.
13	*Airbus*	§3.1	4 of 5	This paragraph states that 'an applicant may elect to address the EWIS requirements during the engine certification'. The memo is primarily aimed at providing guidelines for this situation.	It would be worth including as well some guidelines for the other situation, i.e. if an applicant does not address EWIS requirements during the engine certification even if it is only a reminder that the engine manufacturer will have to be prepared to support the Airframer in showing compliance to EWIS requirements	Suggestion	Substantive	Agreed	Reminder regarding engine support added 31/10
14	*Airbus*	Appendix 1		CS 25.1707 (c) It is said for this paragraph that in a typical installation, electrical power generators and associated cabling are supplied by the A/C manufacturer. This is not necessarily true. VFG feeders installed on the engine are often supplied by the engine manufacturer even if they are not included in the Engine Type Definition.	I would propose to delete the first part of the 'applicability statement' for this paragraph and just keep the second part.	Suggestion	Substantive	Partly agreed	first sentence rephrased to clarify responsibility engine supplied aircraft parts.
15	*Airbus*	General Comment		In the CM, the proposal is to rely on the compliance to CS-E 50 and CS-E510 which are providing very high level safety objectives requirement that must be fulfilled by the complete engine or engine control design. It is not straightforward to make a direct link between the safety objective and a good harness installation design practice. § 3.1 mentions a CRI that will be established to detail the means by which all engine EWIS components will comply with the equivalent CS-E paragraph. This may be in this CRI that the information about design rules will appear.	The CM should mention that the content of the CRI needs to be shared with the Airframer for each program in order to confirm the intent of CS25 EWIS requirements is met. It may also probably be a good idea to have a sentence in the §3.1 of the CM stating: It is expected that most of the compliance evidence will rely on Electrical Wiring Design and Installation Rules/Directives established by the Engine Manufacturer.	Suggestion	Substantive	Agreed	510 and 50 are recognised as high level requirements that need to be fulfilled, compliance with EWIS will need to rely on the electrical installation rules and design practises that are used by the company design standards. It's worth stating in a CRI the detail of the compliance demonstration of the electrical design. A CRI is not intended to be shared with the aircraft manufacturer, although the relevant information and details needs to be shared via the Installation Manual.
16	*Steve Hanak, GE Aviation*	EWIS Table 25.1701(c)	2	Definitions: Under Matrix Item 25.1701(c) that defines the exclusions from EWIS for electrical equipment/avionics, add a statement under the Applicability Column that clarifies this for engine applications	Applicability: Components substantiated to CS S 80 (except electrical harness assemblies) are exempt from EWIS requirements. (e.g. internal wiring inside an engine control)	Yes	No	Agreed	The intent of wiring inside engine components that are certified under CS-E 80 don't need to be addressed separately under EWIS. Text changed
17	*Steve Hanak, GE Aviation*	EWIS Table Matrix Item 25.1703 (a)	3	In applicability columns – last statement.."…within the established limits of strain (CS-E 100(a) and (c))" is unnecessary in that installation and function are covered by the other CS-E reqts already stated. Limits of strain are more appropriate for structural parts and engine critical hardware.	Delete the statement referring to CS-E 100 in Applicability Column.	Yes	No	Agreed	CS-E 100 part removed

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18	*Steve Hanak, GE Aviation*	EWIS Table Matrix Item 25.1707(a)	6	Single fault tolerance is also addressed in CS-E 50 (c)(2) for LOTC events.	Add reference to CS-E 50(c)(2) in CS-E Column and modify phrase in Applicability column "….single failures of Engine Control Systems components do not results **in a LOTC/LOPC event** or a Hazardous Engine Effect."	Yes	No	Agreed	CS-E 50(c)(2) added, text rephrased
19	*Steve Hanak, GE Aviation*	EWIS Table Matrix Item 25.1707(c)	7	In working with airframers, their definition of "heavy current" is in excess of 30 amperes/phase. On engine generators to power the engine control are far less that level. Suggest adding guidance to how "heavy current" to exempt engine control components.	Add wording to state this applies to engine components that generate and/or consume current of 30 amps/phase of greater *(or at lease define "heavy current")*	Yes	No	Noted	"Heavy Current" is indeed not specified. It is assumed to be a significantly high current in relation to other levels of current .
20	*Steve Hanak, GE Aviation*	EWIS Table Matrix Item 25.1707(j)(k)	8	Single fault tolerance is also addressed in CS-E 50 (c)(2) for LOTC events.	Add reference to CS-E 50(c)(2) in CS-E Column and modify phrase in Applicability column "….single failures of Engine Control Systems components do not results **in a LOTC/LOPC event** or a Hazardous Engine Effect."	Yes	No	Agreed	CS-E 50(c)(2) added, text rephrased
21	*Steve Hanak, GE Aviation*	EWIS Table Matrix Item 25.1713(c)	16	There are no CS-E 80 or CS-E 130 requirements for wire flammability similar to Appendix F (CS-25) thus no direct compliance can be shown to this burn distance/duration criteria. The threat of toxicity of cabin air is addressed in showing compliance to CS-E 510(g)(2)(ii) and the engine is separated from the aircraft per CS 25.1191. Engine wire flammability Is not addressed in CS-E compliance (other than function of key systems in a fire (CS-E 130)).	The engine installation requirements of CS 25.1191 dictate a firewall between the airplane and the engine, thus the prevention of propagation of fire/hot fumes from engine EWIS components to other parts of the airplane is demonstrated at the CS-25 level. In addition the Engine Safety assessment of CS-E 510(g)(2)(ii) will substantiate no toxic smoke/fumes are a hazard for the airplane. Thus engine wire flammability is substantiated as any other engine fire threat to the aircraft and within the CS-E 510 requirements. Based on this no discussion of engine wire type or or test methods is germane to the EWIS wire flammability requirement of Appendix F.	No	Yes	Not agreed	Although engine EWIS are generally installed within the fire zone, the fire EWIS requirements are intended to prevent 2nd failure scenarios to other cable or harness systems, if any.
22	*Steve Hanak, GE Aviation*	EWIS Table Matrix Item 25.1727	22	Not all fuel shut off wiring and fire detection systems are owned by the airframe manufacturer. In cases where these system are owned by the engine manufacturer and substantiated to the CS-E, add a paragraph	Add paragraph to Applicability Columns "The EWIS components that are installed by the engine manufacturer that are associated with fuel shut-off and engine fire protection systems, located in a fire zone are fire resistant and are certified under CS-E 130 and AMC E 130(2)(c).	No	Yes	Partially agreed	Text rephrased

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23	*BOEING*	Par 4	4	**THE PROPOSED TEXT STATES:** *Although these accidents were not caused by engine wiring, which is readily accessible for regular maintenance, and CS-E already contains requirements that are applicable to EWIS components because they are part of the engine equipment, it was determined that the intent of the EWIS requirements is applicable to engine EWIS components.*	**REQUESTED CHANGE:** *Although these accidents were not caused by engine wiring, which is readily accessible for regular maintenance, and CS-E already contains requirements that are applicable to EWIS components because they are part of the engine equipment, it was determined that the intent of the EWIS requirements is applicable to engine EWIS components**, when installed on airplanes with a certification basis that includes CS-25, Amdt 5 or later**.* **JUSTIFICATION:** CS-25, Subpart H is only applicable to airplanes certified to Amendment 5 or later	Yes		Not agreed	Although it's understood that new certifications can use the 21.101 requirements apply for earlier requirements, the CM is intended to provide guidance on current requirements. When discussing the Certification Basis for new changes or derivative models, it can be discussed in which way the contents of this CM needs to be addressed, and any changes applied should be agreed in a CRI.
24	*BOEING*	Par 3.1	4	**THE PROPOSED TEXT STATES:** *For engines to be installed on a CS-25 aircraft, an applicant may elect to address the EWIS requirements during the engine certification. In such a case, a Certification Review Item (CRI) will be established which refers to each of the CS-25 EWIS requirements in Table 1.*	**REQUESTED CHANGE:** *For engines to be installed on a CS-25 aircraft **Amdt 5**, an applicant may elect to address the EWIS requirements during the engine certification. In such a case, a Certification Review Item (CRI) will be established which refers to each of the CS-25 EWIS requirements in Table 1**Appendix 1**.* **JUSTIFICATION:** CS-25, Subpart H is only applicable to airplanes certified to Amendment 5 or later. The same attachment is both referenced as Appendix 1 and Table 1. Pick one to be consistent and to avoid confusion.	Yes		Not agreed	Although it's understood that new certifications can use the 21.101 requirements apply for earlier requirements, the CM is intended to provide guidance on current requirements. When discussing the Certification Basis for new changes or derivative models, it can be discussed in which way the contents of this CM needs to be addressed, and any changes applied should be agreed in a CRI.
25	*BOEING*	App 1, Par 25.1703	3-4	**THE PROPOSED TEXT STATES:** *25.1703 Function and installation; EWIS* *(See AMC 25.1703)*	**REQUESTED CHANGE:** ***CS-E 80*** should be added to list of applicable regulations. **JUSTIFICATION:** AMC E 80 addresses component level testing performed in showing compliance to CS-E 80, including DO-160, EUROCAE-14, etc., which are applicable to EWIS components.	Yes	Yes	Agreed	CS-E 80 added

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26	*BOEING*	App 1, Par 25.1709(a)	13-14	**The proposed text states:** *25.1709 System safety; EWIS* *(See AMC 25.1709)*	**REQUESTED CHANGE:** Suggest removing the applicability of 25.1709 (a) to engine installations. **JUSTIFICATION:** CS-E 50 and CS-E 510 do not address catastrophic failure conditions. This is addressed at the airplane level under 25.1709.	Yes	Yes	Partially agreed	Catastrophic effects can only be addressed at aircraft level. The most severe failures at engine level are "Hazardous Engine Effects" which are addressed by CS-E 50 and CS-E 510. These requirements prescribe reliability targets, and prohibit hazardous control system failures resulting from single point failures.
27	*BOEING*	App 1, Par 25.1711(c), (d)	15-16	**The proposed text states:** *25.1711 Component identification; EWIS* *(See AMC 25.1711)*	**REQUESTED CHANGE:** Suggest adding ***CS-E 80*** to applicable regulation list for 25.1711 (c) and (d) **JUSTIFICATION:** CS-E 80 (AMC E 80) includes the testing required to demonstrate legibility of labelling and long term performance of the part.	Yes	Yes	Agreed	@ CS-E 80, done
28	*BOEING*	App 1, Par 25.1713(a) and (c)	15-16	**The proposed text states:** *25.1713 Fire protection; EWIS* *(See AMC 25.1713)*	**REQUESTED CHANGE:** Remove CS-E 130 from regulation list. **JUSTIFICATION:** CS-E 130 does not address toxic gas emissions, flammable fluid leakage and wire self-extinguishing. This was identified as a gap on other EWIS projects. No engine regulations currently address 25.1713(a) or (c).	Yes	Non – Concur Yes	Not agreed	It is agreed that Compliance to CS-E is not sufficient to address the EWIS fire requirements. Engine Applicants that elect to address ewis during certification will need to comply with CS-E fire requirements in a manner which also addresses EWIS.
29	*TCCA*	Section 1.2/References	3	Label table as "Table 1" which is discussed in the CM text but does not point where Table 1 may be found or what it is.	EASA to consider labelling the reference material as "Table 1" and add text indicating where to find it and what it represents	Yes		agreed	Reference added
30	*TCCA*	Section 1.2/References	4, 5	On top right hand corners of page 4 and page 5 we observed a typo.	EASA to consider changing text to read CM-PIFS-016			agreed	Typo corrected
31	*TCCA*	1.3/abbreviations	4	STC Supplemental Type Certificate is missing in the abbreviations list	Add text			agreed	Abbreviation added
32	*TCCA*	3.1 CS-E EWIS/Requirements	4	Appendix 1 is the EWIS list	Suggest to change text to read (Appendix 1 – EWIS List" and also, attach the list or cut/paste it in the body of the CM." to make it clearer for the reader.			agreed	Text changed, CM and Appendix combined in one document
33	*TCCA*	3.1 CS-E EWIS/Reuirements	4	If you label as "Table 1" in reference 1.2, then this is applicable as written	Suggest to change text, if needed.			agreed	Text changed

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34	*TCCA*	3.2/who this Certification Memorandum affects	5	Q1: Does the CM affect parts defined by EASA as "replacement parts" that are similar to what is defined by the FAA as PMA (Parts Manufacturer Approval) or by Transport Canada as PDA (Part Design Approval)? Q2: Is the intent of the current sentence to cover the aspect stated in Q1 above?	Suggest to clarify intent, if applicable.	suggestion	substantive	noted	Q1/Q2 Certification of PMA/PDA need to address the same requirements as the original certified parts. The CM does not specifically address replacement parts, only repairs. In accordance with Part 21.
35	*TCCA*	EWIS List(Appendix 1)	17	Add in the Applicability Statement to state "In addition to the TCDS, the engine Compliance Record should reflect how compliance to the EWIS requirements was shown at engine level".	Suggest to add text, if applicable			Partly agreed	EWIS is not necessarily included in the TCDS, although the addressed items should be clearly stated in the Installation Manual. The Means of Compliance and demonstration of Compliance will need to be recorded in the usual form, like i.e. the Compliance Record.
36	*TCCA*	3.1	4	Policy does not clearly state if aircraft applicant will remain responsible to demonstrate and record compliance for CS-25 EWIS requirements when CS-E applicant agrees to follow the guidance in CM-PIFS-016. Accountability between aircraft and engine applicants must be clear.	Suggestion to add text clarifying accountability			Agreed	Clarification added 3.2
37	*TCCA*	General		Once CM-PIFS-016 is published there will not be a formal linkage to CS-25 EWIS AMC indicating that credit can be given to the compliance demonstration data in the CS Compliance record.	EASA to consider updates to CS-25 EWIS AMC to reflect that some credit can be given to the compliance demonstration data in the CS-E compliance record.			Noted	CM's are indeed subject for possible adaption in the AMC or GM of future CS25 amendments.
38	*TCCA*	2 and 3	4	Sections 2 or 3 do not clearly state that the intent of this policy is not to delegate CS-25 EWIS requirement compliance demonstration to CS-E applicants	Revise CM-PIFS-016 as deemed appropriate.			Agreed	The intent of the CM is to support the engine installation in large aircraft by perfoming and sharing compliance demonstrations regarding EWIS requirements. It's indeed not intended to demonstrate compliance outside the scope of the OEM, however interfaces could be identified and should be recorded and communicated between the parties. Clarification added

* Please complete this column using the word "yes" or "no"
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