	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
1. Frontier Airlines	1. COMMENT NO.1 I take exception to the proposed wording in Section 5b(8)(j)1. As it is now worded, this section gives the impression that pre-insulated splices may be used in any and all circuits as long as they meet the spec given and are inside the pressurized area. A safer way to state the first sentence in this section might be something like the following: "If not prohibited, pre-insulated splices conforming to SAE AS7928 or equivalent specification may be installed in pressurized areas if these types of splices are listed as acceptable for use by the manufacturer in their standard wiring practices manual. Of course, splices should not be installed in essential circuits, such as the Captain's instrument/communication/navigation circuits, stabilizer trim circuits, fire control circuits, in wires that flex, etc. except temporarily, to the next A Check or equivalent, if		We agree that better training regarding EWIS is necessary. We have issued AC 120-94, which outlines a training curriculum, for maintenance personnel (and others) on proper maintenance of EWIS. We made no changes as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	approved specifically by Engineering. . . . .” <u>BACKGROUND FOR THE ABOVE SUGGESTED CHANGES</u>: Boeing’s SWPM is purposely written in fairly vague terms because Boeing assumes that each operator will properly train all their Avionics Techs how to inspect, install and repair aircraft wiring systems. Therefore, it does not go into great detail regarding proper handling of aircraft wiring. However, not all airlines provide this proper training. For instance, I worked for an airline in the 1980’s that had no Avionics specialists working on their flight lines or even in the heavy maintenance area except for a small “Radio” group that was allowed to work solely on Communications, Auto Pilot, Navigation and IFE systems. All the many remaining electronically controlled systems on B727’s, B737’s, MD-80’s and DC-9’s such as fuel quantity, fire detection/extinguishing, and air conditioning/pressurization, etc., etc. were handled by ordinary A & P Technicians that often had received no hands-on training regarding how to properly install,		

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	route, clamp, splice, repair and terminate electrical wiring. As one would expect, this situation caused numerous problems in that airline's aircraft electrical systems. Early in the jet age, Boeing had issued a comprehensive Design Manual. It contained a lengthy list of restricted circuits, in which it was "taboo" to install splices. It also disallowed installation of more than 1 splice in each authorized wire. Years later, when Boeing issued its initial SWPM, the electrical section of their Design Manual was superseded by a much less restrictive SWPM. When queried as to why Boeing had watered down the earlier stringent specifications found in the Design Manual, we were told that Boeing had decided to let the individual operators establish their own specifications for aircraft wiring maintenance and train their people accordingly. In other words, for Boeing-built aircraft, the burden of establishing proper aircraft wiring maintenance training is left up to the airlines. This being the case, unless the FAA steps up and establishes comprehensive wiring maintenance specifications, the Boeing		

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	operators may not have the required guidance to do the job correctly.		
2. Frontier Airlines	2. COMMENT NO. 2 Regarding the wording in Section 5b(8)(j)2, I suggest that its title be revised to read **Post Insulated Splices** rather than **Mechanically Protected Splices.** Boeing has always called splices that have an insulating sleeve or equivalent installed after splice installation, "Post Insulated Splices". Technically, all splices installed on insulated wiring could be called "Mechanically Protected Splices" after they are installed. The 4th sentence in this Section indicates that splicing in a fuel vapor area is authorized (my airline never splices wiring in or around a fuel tank – too risky). Also, the fact that this sentence is confusingly written to indicate that dual wall heat shrink sleeving may be installed in a fuel vapor area might tempt some unsuspecting individual into thinking that he/she can use a heat gun inside an unventilated fuel tank. For this to happen		ATSRAC recommended that "mechanically protected splices" is more appropriate wording because these new rules apply to all transport category airplanes, not just those manufactured by one company. The FAA shared this reasoning. We agree that better training regarding EWIS is necessary. We have issued AC 120-94 that outlines a training curriculum, for maintenance personnel (and others) on proper maintenance of EWIS. We made no changes as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	in a hot tank (above 85 degrees F.) having residual Jet A fuel could be asking for a potential disaster. <u>BACKGROUND FOR THE ABOVE SUGGESTED CHANGES</u>: Boeing's SWPM is purposely written in fairly vague terms because Boeing assumes that each operator will properly train all their Avionics Techs how to inspect, install and repair aircraft wiring systems. Therefore, it does not go into great detail regarding proper handling of aircraft wiring. However, not all airlines provide this proper training. For instance, I worked for an airline in the 1980's that had no Avionics specialists working on their flight lines or even in the heavy maintenance area except for a small "Radio" group that was allowed to work solely on Communications, Auto Pilot, Navigation and IFE systems. All the many remaining electronically controlled systems on B727's, B737's, MD-80's and DC-9's such as fuel quantity, fire detection/extinguishing, and air conditioning/pressurization, etc., etc. were handled by ordinary A & P Technicians that often had received no hands-on		

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	training regarding how to properly install, route, clamp, splice, repair and terminate electrical wiring. As one would expect, this situation caused numerous problems in that airline's aircraft electrical systems. Early in the jet age, Boeing had issued a comprehensive Design Manual. It contained a lengthy list of restricted circuits, in which it was "taboo" to install splices. It also disallowed installation of more than 1 splice in each authorized wire. Years later, when Boeing issued its initial SWPM, the electrical section of their Design Manual was superseded by a much less restrictive SWPM. When queried as to why Boeing had watered down the earlier stringent specifications found in the Design Manual, we were told that Boeing had decided to let the individual operators establish their own specifications for aircraft wiring maintenance and train their people accordingly. In other words, for Boeing-built aircraft, the burden of establishing proper aircraft wiring maintenance training is left up to the airlines. This being the case, unless the FAA steps up and establishes comprehensive wiring		

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	maintenance specifications, the Boeing operators may not have the required guidance to do the job correctly.		
3. Boeing	Guidance for § 25.1703(c) Boeing comments on Paragraph 5.b.(6, which states that a "reasonable degree of deformation and stretching" should be about 10% of the length of the electrical cable. Boeing considers that 10% of the length of the cable is excessive deformation, and suggest that this degree be reduced to a maximum of 2% of the length.	Boeing requests we make change in paragraph 5.b.(6) from - As it is used in this requirement, a "reasonable degree of deformation and stretching" should be about 10% of the length of the electrical cable. to As it is used in this requirement, a "reasonable degree of deformation and stretching" should be about 2% of the length of the electrical cable.	Section 25.1703(c) is based on the requirement formerly located in § 25.869(a)(3). That section, along with § 25.993(f), was established by Amendment 25-15 in 1967. Although that amendment did not specifically define 10% as the reasonable degree of deformation, 10% is the amount that was intended when Amendment 15 was issued. The reason for these requirements was a United Airlines accident at Salt Lake City on November 11, 1965. In this landing accident, an excessive descent rate of a Boeing 727-22 fractured the fuselage and severed the rigid fuel lines. The engines continued to operate after the crash, fuel from the broken fuel lines continued flowing, and the fuel was ignited by arcing from the broken electrical power

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
			lines. This resulted in a very severe post crash fire. To prevent similar events that would otherwise be survivable, the requirements of § 25.869(a)(3) and 25.993(f) were established. The idea was that the fuselage could be damaged with partial separation in a survivable accident without severing the fuel lines or the electrical power cables inside the fuselage. This would minimize the probability of a fuel fed fire inside the fuselage and allow the occupants time to escape. We made no change as a result of this comment.
4. Boeing	Guidance for § 25.1709 Boeing requests that the FAA delete the contents of paragraph 5c. as being duplicate of guidance provided for certification to 14 CFR §25.1309. As we requested earlier in our comments that §25.1705 only reference use of §25.1309 for EWIS systems, the guidance material should also point to §25.1309 guidance.	Delete all discussion of compliance to 25.1705 currently in AC paragraph 5c and replace with a pointer to 25.1309 guidance.	We have decided to retain § 25.1709 (proposed as § 25.1705). Accordingly, the guidance for § 25.1709 is necessary. We made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	In addition, this paragraph includes a discussion of the inadequacies of §25.1309, which is justification for the presence of §25.1705. Boeing considers that this paragraph is inappropriate for a guidance document as asks that it be removed.		
5. Boeing	Boeing notes that Paragraph 5.f.(7)(a) gives specific instructions for identifying component parts. But Boeing states that the airframe manufacturer has only limited control over part markings of components used throughout the industry. Boeing recommends that the FAA disseminate this guidance to the appropriate organizations responsible for certification of EWIS components.		No change in the AC text was requested.
6. Boeing	**Paragraph 5.g.(2):** (Page 38) This paragraph relates to compliance with the requirements of proposed §25.1713(b). It states: *"EWIS components in regions immediately outside fire zones and in engine pod*	Boeing requests we change - *"EWIS components in regions immediately outside fire zones and in engine pod attachment structures should be made of such materials and installed at such a distance from the firewall that they will not suffer damage that could hazard the airplane if the surface of the firewall*	Section 1.1 does not specify a time within which fireproof components will not suffer damage, nor does that section specify a time for the definition of fire resistant. The 15 minutes is well established within the

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	attachment structures should be made of such materials and installed at such a distance from the firewall that they will not suffer damage that could hazard the airplane if the surface of the firewall adjacent to the fire is heated to 1100° C (2012° F) for 15 minutes." Boeing notes that, in the discussion of §25.1713(b) compliance, the AC requires that EWIS components immediately outside fire zones should not suffer damage that could hazard the airplane if the surface of the firewall adjacent to the fire is heated to 1100° C (2012° F) for 15 minutes. Boeing contends that since the rules require that the EWIS component be only fire-resistant, rather than fireproof, the component needs to be functional for 5 minutes only. Therefore, Boeing requests that the FAA revise the time from 15 minutes to 5 minutes	*adjacent to the fire is heated to 1100° C (2012° F) for 15 minutes."* To - *"EWIS components in regions immediately outside fire zones and in engine pod attachment structures should be made of such materials and installed at such a distance from the firewall that they will not suffer damage that could hazard the airplane if the surface of the firewall adjacent to the fire is heated to 1100° C (2012° F) for 5 minutes."*	aviation industry as the time required for fireproof components to withstand the heat of a fire (e.g., EASA CS-1 does define fireproof using the 15 minute standard). However, it has been the practice in the past to require components required to be fire resistant and located directly adjacent to firewalls to remain functional for 15 minutes. In other areas (i.e., not adjacent to firewalls), the standard is 5 minutes. Such practice is in harmony with the practice of EASA. We made no change as a result of this comment.
7. Boeing	**Paragraph 5.g.(3):** (Page 38) This paragraph relates to compliance with the	Boeing requests we add -	EWIS inside of LRUs are not covered by the EWIS

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	requirements of proposed §25.1713(c). Boeing suggests that the following note be added to the end of the paragraph: *"Small lengths of wires inside an LRU may be exempt from this test and the requirements of §25.1713."* Boeing comments that, for compliance with §25.1713(c), small lengths of wire inside a box do not pose the same hazard as the general purpose wires used on the airplane. It asks that small lengths of wires inside an LRU be exempt from this test and the requirements of §25.1713. The current AC 25.16 ("Electrical Fault and Fire Prevention and Protection") allows for a similar exemption. Additionally, this paragraph refers to testing in accordance with Appendix F (Part I) to Part 25. We note that the related test described in Appendix F requires three samples to be tested, each with a length of 24 inches minimum; however, sometimes it is very difficult to get the required length for testing. We	*"Small lengths of wires inside an LRU may be exempt from this test and the requirements of §25.1713."*	requirements of part 25 subpart H. Refer to the definition of an EWIS in 25.1701. Additionally, the concern of the commenter regarding flammability of wires inside of LRUs is covered in FAA AC 25-16. We made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	recommend that this guideline be removed.		
8. Boeing		Boeing requests we change - *Under section 25.1727(a), EWIS cannot be located in cargo or baggage compartments if its damage or failure may affect safe operation unless it cannot be damaged by movement of cargo or baggage in the compartment and unless its breakage or failure will not create a fire hazard."* *Under section 25.1727(a), EWIS cannot be located in cargo or baggage compartments if its damage or failure may affect safe operation unless it cannot be damaged by normal movement of cargo or baggage in the compartment and unless its breakage or failure will not create a fire hazard."*	§ 25.1721 (proposed as § 25.1727) is meant to ensure that under failure conditions which the cargo compartment is designed to withstand, the EWIS remains protected. We made no changes as a result of this comment.
9. Boeing	**Paragraph 5.p.:** (Page 43) This paragraph relates to compliance with the requirements of proposed §25.1733. It states: *"Flammable fluid shutoff means: EWIS. This section requires*	Boeing requests we change - *"Flammable fluid shutoff means: EWIS. This section requires that EWIS associated with each flammable fluid shutoff means and control be fireproof or be located and protected so that any fire in a fire zone will not affect operation of*	Section 25.1727, proposed as § 25.1733, addresses EWIS components associated with flammable fluid shutoff means, as required by § 25.1189. That section requires that "Each flammable fluid shutoff means and control must be fireproof or

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	that EWIS associated with each flammable fluid shutoff means and control be fireproof or be located and protected so that any fire in a fire zone will not affect operation of the flammable fluid shutoff means, in accordance with the requirements of §25.1189." Boeing requests that the FAA change the word "fireproof" to "fire resistant" to agree with the wording in proposed §25.1713	*the flammable fluid shutoff means, in accordance with the requirements of §25.1189."* to - *"Flammable fluid shutoff means: EWIS. This section requires that EWIS associated with each flammable fluid shutoff means and control be fire resistant or be located and protected so that any fire in a fire zone will not affect operation of the flammable fluid shutoff means, in accordance with the requirements of §25.1189."*	must be located and protected so that any fire in a fire zone will not affect its operation." Therefore, the use of the term "fireproof" is appropriate. No changes have been made due to this comment.
10. Boeing	**Paragraph 5.q.:** (Page 43) This paragraph relates to compliance with the requirements of proposed §25.1735. It states: *"The environmental qualification of the system components*	Boeing requests we remove 25.1735 guidance. They've requested we remove 25.1735 from the rule.	We did not delete the rule as requested The guidance in the AC is therefore appropriate and valid. We have made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	should include the use of fire resistant EWIS components and/or design to ensure that the system will detect fire if exposed to it." To align with our previous comments requesting the removal of this section from the rule, Boeing requests that this guidance material be deleted, as well.		
11. Boeing	**Paragraph 5.t.(5):** (Page 45) This paragraph relates to compliance with the requirements of proposed §H25.5(a)(3). As written, paragraph (5) intermixes the terms "requirements" and "guidelines." Outside of the airworthiness limitations cited in Section 9 of the Maintenance Planning Data Document, the information provided in our ICA are guidelines, not requirements. Boeing requests that the FAA use the term "guidelines" rather than "requirements" within this entire paragraph.	Replace term "requirements" with "guidelines" every time it appears in this paragraph.	We partially agree with this comment. § H25.5(a)(3) does require the ICA to include wire separation requirements, as determined by § 25.1707 (proposed as § 25.1709). We have replaced the word "guidelines" with the word "requirements."
12. Boeing	**Paragraph 5.t.(7):** (Page 46) This paragraph relates to compliance with the	Boeing requests that the FAA revise this paragraph to limit the information provided by the	We have revised the AC to make clear that the airplane

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	requirements of proposed paragraph H25.5(a)(5). As written, paragraph (7) indicates that the applicant needs to provide actual electrical load data, and instructions on updating it following future modifications. This paragraph also states that maintaining an updated record of actual loads is important to ensure that modifications do not exceed the generating capacity. Boeing is concerned that this guidance could be construed such that the manufacturer -- and not the certificate holder -- is to be held responsible for maintaining the actual loading for every airplane. Although Boeing doubts that this is the intent of the FAA, our concerns are reinforced by the absence of any requirement that the certificate holder maintain a current electrical load analysis. Boeing requests that the FAA revise this paragraph to limit the information provided by the manufacturer as being the as-delivered electrical load analysis and instructions on methods the certificate holder could use to maintain their electrical load analysis.	manufacturer as being the as-delivered electrical load analysis and instructions on methods the certificate holder could use to maintain their electrical load analysis.	manufacturer is responsible for the electrical load data for the "as delivered" airplane. It is the responsibility of future modifiers to update that data when a modification requires it to be revised.
13. Airbus	AC for §25.1701(a)	Change	We agree with the commenter and have revised the AC. The words

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	Airbus proposes to replace in (1)(b) the word "energy" by "energy or information". Reason: Although transmission of information is based on transmission of energy, the paragraph might wrongly be interpreted as being applicable only for high power – or power supply transmission.	(b) Section § 25.1701(a) defines EWIS as any wire, wiring device, or combination of these, including termination devices, installed in any area of the airplane for the purpose of transmitting electrical energy between two or more intended termination points. To - (b) Section § 25.1701(a) defines EWIS as any wire, wiring device, or combination of these, including termination devices, installed in any area of the airplane for the purpose of transmitting electrical energy or information between two or more intended termination points.	"electrical energy" have been replaced with "electrical energy, including data and signals."
14. Airbus	AC for §25.1701(b) Airbus proposes to add into (2)(a) wirings coming from equipments delivered with external cables that will be installed on aircraft bundles (like particular galleys, seat electronics …) Furthermore latest Industry Standards should be reflected in (2)(b), which states that distribution panels and power centers are not qualified to environmental standards. On recent aircraft pro- grams, power centers tend to be supplied		We partially agree with the commenter. The external wiring of equipment has been added to the final § 25.1701. The AC has been revised to reflect this. Even though some airplane manufacturers may outsource the design and building of power distribution panels to a vendor, the power distribution panels are typically serviced on the airplane (i.e., not removed). They are maintained, repaired, and modified by the same personnel

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	from equipment manufacturers and consequently be qualified against appropriate environmental standards. Thus they should not belong to EWIS scope. Instead, they should preferably be certified as part of the electrical power system. Reason: For completeness and consistency also the external wiring of equipment should be consid- ered, as it can become part of the aircraft installation. Furthermore, it should be reflected that it is state of the art that distribution panels and power centers are supplied from equipment manufacturers, so they are not necessarily qualified by the A/C manufacturer alone.		who maintain, repair, and modify the rest of the airplane EWIS. Therefore the EWIS inside of these panels must be treated in the same way as the EWIS on the rest of the airplane. We made no other change as a result of this comment.
15. Airbus	AC for §25.1701(c) In (3)(b), Airbus proposes to add the words "for example" after "such as". Reason: To clarify the list of systems	**(b)** The first exception means EWIS components located inside avionic or electrical equipment such as flight management system computers, flight data recorders, VHF radios, primary flight displays, navigation displays, generator control units, integrated drive generators, and galley ovens, if this equipment	We agree with the commenter. We have revised the AC as requested.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	mentioned is not an exhaustive list.	has been tested to industry-accepted environmental testing standards. Examples of acceptable standards are RTCA DO-160 and EUROCAE ED 14, and equipment qualified to an FAA Technical Standard Order (TSO). **(b)** The first exception means EWIS components located inside avionic or electrical equipment such as, for example, flight management system computers, flight data recorders, VHF radios, primary flight displays, navigation displays, generator control units, integrated drive generators, and galley ovens, if this equipment has been tested to industry-accepted environmental testing standards. Examples of acceptable standards are RTCA DO-160 and EUROCAE ED 14, and equipment qualified to an FAA Technical Standard Order (TSO).	
16. Boeing	AC for §25.1703 • From the last sentence of §§ (5) and (9)(b) we can from now understand again that non arc- tracking resistant cables are not formally banished everywhere, when	1. Add to - **(a) <u>Expected service life.</u>** Expected service life should be considered in selecting EWIS components to use. Expected service life means the expected service lifetime of the EWIS. This is not normally less than the	The banning of non arc-tracking resistant wire types was not an objective of ATSRAC Working Group 6. The arc-tracking phenomena of wires must be taken into account when complying with the requirements of 25.1703(b).

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	this was an objective given to ATSRAC Task 6! • In paragraph (8)(a), a sentence could be added: "If the aircraft service life is extended through analysis/modifications, then such analysis should include EWIS components." • Paragraph (8)(c)3 is not at the right place (not related to Mechanical strength). It can be moved to 8(g) or 10. • In paragraph (8)(c)4, the last two sentences are not at the right place (not related to Mechani- cal strength). They can be moved to 8(h).	expected service life of the aircraft structure. If the expected service life requires that all or some of the EWIS components be replaced at certain intervals, then these intervals must be specified in the ICA as required by § 25.1529. The following – If the aircraft service life is extended through analysis/modifications, then such analysis should include EWIS components. 2. Move paragraph (8)(c)3 to 8(g) or 10 In paragraph (8)(c)4, the last two sentences are not at the right place (not related to Mechani- cal strength). They can be moved to 8(h). 3. Remove the example in §§(8)(d) and (8)(e), bend radius can be defined differently according to insulation characteristics or installation practices.	1. If modifications are made to the airplane, then those modifications will be required to comply with § 25.1703. Also if the service life of an airplane is extended, then we agree that assessment of EWIS components should be taken into account. However, we do not agree that this statement needs to be added to the advisory material as all relevant part 25 requirements would have to be addressed in the case of a service life extension proposal. Therefore, adding the requested sentence is not necessary. We made no change because of this comment. 2. While the suggested movement of this paragraph may be appropriate, we believe that the paragraph is related to mechanical strain. If there is not enough slack in the wire for re-terminations, undue strain could be placed on the wire after retermination. Therefore it is appropriate to leave

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
			the wording in this guidance as proposed. We made no change because of this comment. 3. The bend radius measurements given in this paragraph are examples and are not meant to imply that bend radii other than those cited in the AC are not allowed. The first sentence of 5.(8)(c) 4 states: "To avoid damage…minimum radius of bends…should be in accordance with the wire manufacturer's specification." It goes on to state that "guidance on the minimum bend radius can be found in the airplane manufacturer's standard wiring practices manual." These statements clearly allow for flexibility in determining the minimum bend radius. We have made no change as a result of this comment other than adding the word "airplane" before "manufacturer's standard wiring practices manual" to make clear that we are talking about the airplane manufacturer's standards.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
17. Airbus	Remove the example in §§(8)(d) and (8)(e), bend radius can be defined differently according to insulation characteristics or installation practices. • 2. Paragraph (8)(g)3 is redundant with 25.1709 (j). • In paragraph (8)(g)4, add the following sentence to cover other acceptable practices: "When not possible, the bending radius must be in accordance with the acceptable minimum bundle radius."	1.Remove the example in §§(8)(d) and (8)(e), bend radius can be defined differently according to insulation characteristics or installation practices. 3. In paragraph (8)(g)4, add the following sentence to cover other acceptable practices Add to - **4** Wiring routed across hinged panels should be routed and clamped so that the bundle will twist, rather than bend, when the panel is moved. 4 Wiring routed across hinged panels should be routed and clamped so that the bundle will twist, rather than bend, when the panel is moved. When not possible, the bending radius must be in accordance with the acceptable minimum bundle radius.	1.The bend radius measurements given in this paragraph are examples and are not meant to imply that bend radii other than those cited in the AC are not allowed. The first sentence of 5.(8)(c) 4 states: "To avoid damage…minimum radius of bends…should be in accordance with the wire manufacturer's specification." It goes on to state that "guidance on the minimum bend radius can be found in the airplane manufacturer's standard wiring practices manual." These statements clearly allow for flexibility in determining the minimum bend radius. We have made no change as a result of this comment other than adding the word "airplane" before "manufacturer's standard wiring practices manual" to make clear that we are talking about the airplane manufacturer's standards. 2. Although 5.(8)(g) gives guidance repetitive of guidance given for § 25.1709 (now

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
			§ 25.1707), it is appropriate that similar guidance appears in both places, because both regulations address the issue of routing wiring away from high temperature equipment and lines. We made no change as a result of this issue. 3. We agree with this comment and have revised the AC as requested.
18. Airbus	1. • Added note in paragraph (9)(g) is more related to paragraph (9)(h). 2. • Paragraph (10) suggests airframers should give away their standardized installation/design directives to all TC modifiers or STC applicants throughout worldwide Industry. However such directives contain experience and knowledge that is part of the airframer's intellectual property. Consequently, §(10) should be re-worded so as not to jeopardize the best interests of U.S. and European aircraft manufacturers. For	Reword paragraph 10.	1. SAE 50881 covers all aspects of wiring – from selection through installation of wiring and other EWIS components. We have removed the wording "rating" from the note. 2. This paragraph is not intended to imply that a manufacturer must give away intellectual property. This paragraph means that future modifiers can use the same or equivalent standards or design practices to more easily substantiate that their EWIS component selection complies with the EWIS certification requirements. It is meant to

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	example, it could be the responsibility of local airworthi- ness authorities to check that proposed TC modifications do not violate the design practices used by the TC holder.		encourage modifiers to use the same quality of EWIS components and care in design and installation of EWIS as was used by the original equipment manufacturer (OEM). The idea is to maintain the same level of safety as was achieved when the OEM certified the original product. This in no way implies that the OEM must give away intellectual property. We have revised the AC to clarify this point.
19. Airbus	AC for §25.1705 • General comment: All the AC (text, flow chart boxes texts, flow chart boxes comments) should be reviewed and updated to be compliant with new rule proposed text. (see above for §25.1705).		We made no change to § 25.1709 (proposed as § 25.1705) based on Airbus' comment. The AC text is therefore appropriate and aligned with the rule text.
20. Airbus	In the introduction: - In the sentence "Section 25.1705 requires applicants to perform a system safety assess- ment of the EWIS", the word "system" should be removed in order to distinguish the pre-	Change - <u>c. § 25.1705 SYSTEM SAFETY: EWIS.</u> Section 25.1705 requires applicants to perform a system safety assessment of the EWIS. c. <u>§ 25.1705 SYSTEM SAFETY: EWIS.</u> Section 25.1705 requires applicants to perform a safety assessment of the EWIS.	The requirements of § 25.1709 (proposed as § 25.1705) are based on the requirements of EASA's CS 25.1309. Section 25.1709 is meant to require a system safety assessment of the airplane's wiring systems (EWIS). This requirement, and its associated guidance material, were developed

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	sent study from the so-called System Safety Assessment as performed through 25.1309.		to complement § 25.1309 and address its shortcomings with regard to EWIS. Therefore, the reference to a "system safety assessment" in the AC is purposeful. We have made no change as a result of this comment.
21. Airbus	In the sentence "The analysis required for compliance with § 25.1705 is based on a quali- tative and quantitative approach to assessing EWIS safety, as opposed to a purely nu- merical, probability-based quantitative analysis", the words "and quantitative" should be removed, in order to be homogeneous with the content of NPRM discussion page 58550 (1st column): "The analysis described here is based on a qualitative approach to assess- ing EWIS safety as opposed to numerical, probability-based quantitative analysis." -	Change - 5.c. …The analysis required for compliance with § 25.1705 is based on a qualitative *and* quantitative approach to assessing EWIS safety, as opposed to a purely numerical, probability-based quantitative analysis. 5.c. …The analysis required for compliance with § 25.1705 is based on a qualitative approach to assessing EWIS safety, as opposed to a purely numerical, probability-based quantitative analysis.	The analysis is both qualitative and quantitative, and a combination of both types of analyses may be used to demonstrate compliance. The NPRM preamble should have contained both terms, and we have clarified this in the preamble to the final rule. The physical failures sides of Flowcharts 1 and 2 are considered to be a "qualitative" exercise (but they could also contain quantitative analyses), while the functional failures sides of the flowcharts are a combination of both types. We made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
22. Airbus	Inadequacies of §25.1309 in relation to EWIS safety assessments: - Current CS 25.1309 is not limited to systems and equipment that are “required by this subchapter”. As a consequence, Airbus proposes, instead of creating a new rule, to har- monize the existing rules. This solution is considered by Airbus as a better way to address safety concerns. Indeed different rules lead, for manufacturers, to additional compliance		We have decided against removing § 25.1709 from the final rule. As a result, the AC material is appropriate and we have made no change as a result of this comment.
23. Airbus	"Traditional thinking about non-required systems": Also on that point, it can be noted that current CS 25.1309 forbids this kind of thinking. Here is the extract of CS1309 (a): "The aeroplane equipment and systems must be designed and installed so that: (1) Those required for type certification or by operating rules, or whose improper functioning would reduce safety, perform as intended under the aeroplane operating		Section 25.1309 is not harmonized with CS 25.1309. Therefore the statement made in the AC is appropriate as it applies to § 25.1309. We have made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	and environmental conditions. (2) Other equipment and systems are not a source of danger in themselves and do not adversely affect the proper functioning of those covered by sub-paragraph (a)(1) of this paragraph." This is another reason to first harmonize current rules before possibly creating new ones.		
24. Airbus	Integrated nature of EWIS: It is not correct to suggest that airframers perform inadequate 25.1309 safety assessment when a risk is of an "integrated nature". Risks of an integrated nature are adequately covered by 25.1309 safety assessments like Par- ticular Risk Analysis or Common Cause Analysis, without the need for new regulations on top of §25.1309. From a purely regulatory standpoint, 25.1309(b) should be regarded as sufficient.		We have decided against removing § 25.1709 from the final rule. As a result, the AC material is appropriate and we have made no change as a result of this comment.
25. Airbus	Compliance summary: To avoid misinterpretation Airbus	Change - **(4)"<u>Compliance summary.</u> …**The intent is not to	We decided against changing the rule language to remove references to hazardous

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	proposes to replace "hazardous combination" by "unsafe condition".	examine each individual wire and its relation to other wires. Rather, it is to ensure that there are no hazardous combinations. However, …" To – **(4) "<u>Compliance summary.</u> …**The intent is not to examine each individual wire and its relation to other wires. Rather, it is to ensure that there are no unsafe conditions. However, …"	conditions, as requested by this commenter. Therefore the guidance material is appropriate as proposed. We have made no change as a result of this comment.
26. Airbus	Qualitative probability terms: Airbus proposes to remove this paragraph for homogeneity with the Airbus proposed rule.	Airbus requests we delete the following - **"(5) <u>Qualitative probability terms.</u>** When using qualitative analyses to determine compliance with § 25.1705, the following descriptions of the probability terms have become commonly accepted as aids to engineering judgment: **(a) <u>Extremely remote failure conditions.</u>** These are failure conditions that are not anticipated to occur to an individual airplane during its total life but which may occur a few times when considering the total operational life of all airplanes of the type. **(b) <u>Extremely improbable failure conditions.</u>** These are failure conditions so unlikely that they are not anticipated to occur during the entire operational life of all	We have decided against removing § 25.1709 from the final rule. As a result, the AC material is appropriate and we have made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
		airplanes of one type."	
27. Airbus	Classification of failure terms: All the terms are already defined in 25.1309. Having the same definition scattered in various rules may lead, over the time, to lack of homo- geneity following one rule evolution not combined with evolution of the other one(s). Airbus proposes to keep only one reference. Thus it is proposed, here, to make reference to 25.1309.		We use the failure conditions proposed by ARAC for changes to the current § 25.1309. These failure conditions are not currently defined in AC 25.1309-1A. Therefore, they need to be defined in the guidance material for § 25.1709 (proposed as § 25.1705).
28. Airbus	Flowcharts depicting the analysis process: Airbus proposes to remove the word "hazardous" for homogeneity with the Airbus proposed rule.		Because the flowcharts reflect the wording of the rule, we have made no changes as a result of this comment.
29. Airbus	Definitions applicable to §25.1705: Current mitigation definition refers to standard practice when applying 25.1309. Interest to keep definition for the term "mitigation" is only useful if additional information is pro-	Change - **<u>Definitions applicable to § 25.1705. ….</u>** **<u>(c)Mitigation.</u>** Elimination of the hazard entirely or minimization of its severity and probability to an acceptable level. In the case of this rule, the EWIS failure must be mitigated to a point where the probability of a hazardous failure must be at	We believe that the proposed AC text is clear and that this suggested wording does not provide any additional clarification. We therefore have made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	vided. Mitigation definition should be replaced by the following: "Elimination of the hazard due to EWIS failure, entirely or by minimization of its consequence taking appropriate practical design precautions."	least extremely remote and the probability of a catastrophic failure at least extremely improbable To – **<u>Definitions applicable to § 25.1705. ….</u>** **<u>(c) Mitigation.</u>** Elimination of the hazard due to EWIS failure, entirely or by minimization of its consequence taking appropriate practical design precautions. In the case of this rule, the EWIS failure must be mitigated to a point where the probability of a hazardous failure must be at least extremely remote and the probability of a catastrophic failure at least extremely improbable	
30. Airbus	Flow chart 1: Airbus propose to remove the "mitigation definition" at the bottom of the flow chart and replace it by reference to §9(c)		We believe the AC text referred to here is clear as proposed. We've made no change as a result of this comment.
31. Airbus	Descriptive text for flowchart 1, Section (b) EWIS characteristics: Airbus proposes to replace the first sentence by: "Use the results of BOX A & J to identify EWIS	Change - **<u>ANALYSIS OF POSSIBLE PHYSICAL FAILURES</u>**	We agree with the commenter and have revised the AC as requested. We've also revised the corresponding descriptive text for Flowchart 2.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	installation criteria.	**(b) BOX B EWIS characteristics.** Use the results of the FHA (BOX A) to identify EWIS installation criteria and definitions of component characteristics. Results from BOX B are fed into the preliminary system safety analysis (PSSA) and system safety analysis (SSA) of BOX J. to - **ANALYSIS OF POSSIBLE PHYSICAL FAILURES** **(b) BOX B EWIS characteristics.** Use the results of BOX A and J to identify EWIS installation criteria and definitions of component characteristics. Results from BOX B are fed into the preliminary system safety analysis (PSSA) and system safety analysis (SSA) of BOX J.	
32. Airbus	Descriptive text for flowchart 1, Section (c)(2) V&V of installation criteria: The text contained in the final report of ATSRAC Task 6 is considered by Airbus as more ap- propriate. Indeed the wording of several sentences was changed	**(c) BOXES C, D, and E Validation and verification of installation criteria.** **1**Ensure that the EWIS component qualification satisfies the design requirements and that components are selected, installed, and used according to their qualification characteristics and the aircraft constraints linked to their location (refer to the requirements of § 25.1703).	We agree with the commenter and have revised the AC as requested. We've also revised the corresponding descriptive text for Flowchart 2.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	without any identified advan- tage. Also the sentence "Regardless of probability, any single... should be substantiated" was added to focus on one of the failure cases without any rationale. Finally the references made to §25.1703(b) for cable selection do not add significant clarification compared to the sentence that indicates that the process will be used to ascertain that design & installation criteria were correctly applied.	**(c) BOXES C, D, and E Validation and verification of installation criteria.** **1** Ensure that the EWIS component qualification satisfies the design requirements and that components are selected, installed, and used according to their qualification characteristics and the aircraft constraints linked to their location (refer to the requirements of § 25.1703 and § 25.1709).	
33. Airbus	Descriptive text for flowchart 1, Section (c)(2) V&V of installation criteria: The text contained in the final report of ATSRAC Task 6 is considered by Airbus as more ap- propriate. Indeed the wording of several sentences was changed without any identified advan- tage. Also the sentence "Regardless of probability, any single... should be substantiated" was		All of the ATSRAC recommended text was retained. However, it was rearranged in order to be presented in a clearer manner and meet FAA style guidelines. This text is harmonized with the proposed EASA guidance. It is good practice to assume that a

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	added to focus on one of the failure cases without any rationale. Finally the references made to §25.1703(b) for cable selection do not add significant clarification compared to the sentence that indicates that the process will be used to ascertain that design & installation criteria were correctly applied.		wire carrying electrical power (such as galley feeders, main power cables from the generators, etc.), is likely to arc and to design the airplane systems with robust enough mitigating factors that this would not cause a hazard. The reference to § 25.1703(d) provides a good reminder that wire selected for a particular application must take into account known characteristics of that wire. We have made no change as a result of this comment.
34. Airbus	Descriptive text for flowchart 1, Section (d) BOXES F & G Development and validation of mitigation strategy: To be homogeneous with Airbus proposed rule, keep only the 2 criteria: - Catastrophic failure conditions do not result from a single common cause event or failure. - This mitigation solution does not introduce any new potential failure	Change this - **(d) BOXES F & G <u>Development and validation of mitigation strategy</u>**. Identify and develop a mitigation strategy for the physical failures and their adverse effects identified in Boxes D and E. Validation and verification of the mitigation solution should ensure that: **<u>1</u>** Hazardous failure conditions are extremely remote. **<u>2</u>** Catastrophic failure conditions are extremely improbable and do not result from a single common cause event or failure.	We have made no changes to the wording of § 25.1709 (proposed as § 25.1705) and therefore have not revised the wording of the guidance to § 25.1709.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	conditions.	**3** This mitigation solution does not introduce any new potential failure conditions. To - **(d) BOXES F & G** **Development and validation of mitigation strategy**. Identify and develop a mitigation strategy for the physical failures and their adverse effects identified in Boxes D and E. Validation and verification of the mitigation solution should ensure that: ~~**1** Hazardous failure conditions are extremely remote.~~ **1** Catastrophic failure conditions are extremely improbable and do not result from a single common cause event or failure. **2** This mitigation solution does not introduce any new potential failure conditions.	
35. Airbus	Descriptive text for flowchart 1, Section (g) BOX J System safety assessments For compliance with the proposed rule, Airbus propose to replace BOX text and box comment	Change text for Box J in the flowchart - Box comment: In the box text, only the Systems FHA are used because by application of 25.1309 all systems FHA are built based on aircraft FHA.	We believe that the text in Box J as proposed clearly states the intent of Step G – that is, that the mitigation strategies must be validated and verified. An applicant will have to verify that any hazardous or catastrophic failure conditions meet the

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	as follows: - Box text (in the flow chart1): Based on CAT failure conditions identified in Systems FHA/PSSA/SSA, Common Cause Analysis is performed including EWIS as a potential common cause (from BOX B). - Box comment: In the box text, only the Systems FHA are used because by application of 25.1309 all sys- tems FHA are built based on aircraft FHA		probability requirements of the rule. A common cause analysis may be one of the tools used to demonstrate this. We made no change as a result of this comment.
36. Airbus	Descriptive text for flowchart 1, Section (i) BOXES N & O The last paragraph should be included into the last bullet. Indeed each developed mitigation strategy has to be validated against possible adverse effects. The text should thus be: "Confirm that this mitigation solution is compatible with existing installations and installation criteria. If the EWIS was the failure cause, the subsequent mitigation strategy	Change - **(i) BOXES N and O** **Development and validation of mitigation strategy.** Identify and develop a mitigation strategy for the functional failures and adverse effects identified in BOX J. Validation and verification of the mitigation solution should - •Determine if initial objective is fully reached. •Confirm that this mitigation solution is compatible with existing installations and installation criteria.	This text was moved into a "note," to make it more noticeable to the reader.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	developed may introduce new adverse effects not previously identified by the analysis. Check for any new adverse effects and update the aircraft level FHA and other system safety assess- ments as necessary."	If the EWIS was the failure cause, the subsequent mitigation strategy developed may introduce new adverse effects not previously identified by the analysis. Check for any new adverse effects and update the aircraft level FHA and other system safety assessments as necessary. To – **(i) BOXES N and O** **Development and validation of mitigation strategy.** Identify and develop a mitigation strategy for the functional failures and adverse effects identified in BOX J. Validation and verification of the mitigation solution should - •Determine if initial objective is fully reached. Confirm that this mitigation solution is compatible with existing installations and installation criteria. If the EWIS was the failure cause, the subsequent mitigation strategy developed may introduce new adverse effects not previously identified by the analysis. Check for any new adverse effects and update the aircraft level FHA and other system safety assessments as necessary.	
37. Airbus	Flow chart 2 Airbus is not directly concerned by this flow chart, thus Airbus does not comment		

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	on its content otherwise than suggesting harmonization with the modifications proposed by Airbus on flow- chart1.		
38. Airbus	AC for §25.1709: • In §(1), 4th sentence, the mentioning of a "barrier", as stated in the rule, is missing.	Airbus requests inclusion of barriers in e.1. But barriers are discussed in e.2. **GENERAL GUIDANCE FOR § 25.1709.** **(1) Summary.** The continuing safe operation of an airplane depends on the safe transfer of electrical energy by the EWIS. If an EWIS failure occurs, the separation that the EWIS has from other EWIS, systems, or structure plays an important role in assuring the hazardous effects of the failure are mitigated to an acceptable level. Section 25.1709 requires applicants to design EWIS with appropriate separation to minimize the possibility of hazardous effects upon the airplane or its systems. As used in § 25.1709, the term "separation" is a measure of physical distance. The purpose of separation is to prevent hazards of arcing between wires in a single bundle, between two or more bundles, or between an electrical bundle and a non-electrical system or structure. **(2) Separation by physical distances versus separation by barrier.** Section 25.1709 states	The goal of § 25.1709 (now § 25.1707) is to achieve adequate separation through physical distance. A barrier may be used if it provides protection equivalent to that separation. This is explained in paragraph 5.d.(2) of the AC. We made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
		that adequate physical separation must be achieved by separation distance or by a barrier that provides protection equivalent to that separation distance. The following should be considered when designing and installing an EWIS:	
39. Airbus	The entire text of §(5) gives evidence that the FAA recognizes the wording "hazardous condition" as highly ambiguous and misleading, as it may probably be interpreted in relation with 25.1309 system safety classification. Instead of relying on clarifications in a separate Advisory Circular, it would be simpler to just eliminate ambiguities by simply using an unambiguous wording like "hazards" in the proposed 25.17xx regulations themselves. If not done, risks exist that industry will be obliged to double all necessary brackets at each point, in order to cover a single bracket defect		The discussion about the brackets is an example, to help explain the type of assessment required to demonstrate that a hazardous condition will not occur. It is only an example and does not imply that double brackets must be used. The comment regarding the rule wording was addressed in the preamble of the final rule.
40. Airbus	In § (6)(d): it is appropriate to recall that EWIS components for the generators must comply with 25.1351(b)(1) & (2) and must receive the same attention as generators themselves. However, (6)(d) fails to substantiate why the proposed		We have clarified the wording in the AC to define what is meant by the term “independent airplane power source.” The meaning of this requirement is the same as it was when it was located in

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	25.1709(d) requires that a fault in one generator EWIS must definitely not affect any other generator. This requirement is more severe than current 25.1351(b)(1) & (2) and may for example prevent design like generators paralleling, even if all other safety requirements are met, without any clear reasons. FAA should develop rationales for the more severe generator isolation requirement or make it in-line with cur- rent 25.1351(b).		§ 25.1351.
41. Airbus	1. In §§ (6)(e) to (g): the text should call for common-points minimization, instead of full 100% separation, to allow for some flexibility to be discussed on a case-by-case basis with the airworthiness authority. Indeed, in some cases, it may not be technically feasible to implement the theoretically desired separation. The current text appears to call for extending SFAR88-based fuel system wires installation practices to just each and every EWIS component in the airplane 2. (see for example the last sentence of (f), which appears as not practical and		1. This rule does not extend SFAR-88 requirements to every EWIS component on the airplane. The rule does allow flexibility if it can be shown that EWIS component failure and/or fluid leakage within the available separation will not cause a hazardous condition. The rule does allow for electrical connections necessary for proper system operation. We made no change as a result of this comment. 2. It is possible, and reasonable,

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	unreasonable). Precautions proportional to the risks, to be assessed on a case-by-case basis, would be more appropriate.		to design EWIS installations so that a single failure of a clamp will not interfere with flight controls or other moveable flight control surfaces or moveable equipment. We made no change as a result of this comment.
42. Airbus	In paragraph (6)(h): it should be kept in mind that the use of system redundancy does not always mean the system is flight-critical. Even in non-critical systems, redundancy is often used because equipments reliability does not meet system-level safety targets, or simply for commercial reasons. That does not necessarily mean the associated EWIS does not meet system-level safety targets either. That does not mean there is commercial need for EWIS separation either. Some redundant systems may share common connectors without risks. Consequently the text of (6)(h) should be corrected. The decision as to whether or not separate EWIS in accordance with system redundancies should be driven by 25.1309 system safety assessments.	Revise the text of (6)(h). The decision as to whether or not separate EWIS in accordance with system redundancies should be driven by 25.1309 system safety as- sessments.	Section 25.1707(k) is concerned only with systems for which redundancy is required because of specific certification rules, operating rules, or as a result of the assessment required by § 25.1709 (proposed as § 25.1705). We have revised the AC to clarify this.
43. Airbus	AC for §25.1711: • In §(2) replace "redundancy" by "redundancy or	Change -	The requirements of § 25.1711(b) are concerned with systems for

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	particular need". The word redundancy alone does not cover all the original intention, i.e. identification of fly-by-wire cables inside a bundle. Replace the word "critical" by "particular" as this word far exceeds the need asked by the rule.	**(2) <u>§ 25.1711(b).</u>** Certain airplane systems are installed with redundancy because of certification rules or operating rules or in order to meet the reliability requirements of § 25.1705. For EWIS components associated with these systems, paragraph (b) requires specific identification indicating component part number, function, and separation requirement. This is necessary to prevent modifiers from unintentionally introducing unsafe design or installation features on previously certified airplanes when they install new or modified systems. Such identification will aid the designers and installers of the new system by alerting them to the presence of the critical system. It will enable them to make appropriate design and installation decisions. Component identification will also make those performing maintenance and inspections more aware of what systems are associated with specific EWIS in the areas undergoing maintenance or inspection. To - **(2) <u>§ 25.1711(b).</u>** Certain airplane systems are installed with redundancy or particular need because of certification rules or operating rules or in order to meet the reliability requirements of § 25.1705. For EWIS components associated with these systems, paragraph (b) requires specific identification indicating component part number,	which redundancy is required by certification rules, by operating rules, or as a result of the assessment required by § 25.1709. The AC material reflects this. A manufacturer may have commercial reasons for providing redundancy for other systems not covered by the rule. In those cases they can choose to uniquely identify EWIS associated with those systems in the same manner for which EWIS associated with certain systems are required to be identified by § 25.1711(b). However, the rule doesn't require this, and the AC material provides guidance for the requirements of § 25.1711. We have replaced the term "critical systems" with "these systems" to make it clear we are talking about systems covered by the requirements of § 25.1711(b).

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
		function, and separation requirement. This is necessary to prevent modifiers from unintentionally introducing unsafe design or installation features on previously certified airplanes when they install new or modified systems. Such identification will aid the designers and installers of the new system by alerting them to the presence of the particular system. It will enable them to make appropriate design and installation decisions. Component identification will also make those performing maintenance and inspections more aware of what systems are associated with specific EWIS in the areas undergoing maintenance or inspection.	
44. Airbus	In paragraph §§ (2), (7)(b), (7)(c): it may not be practically feasible to mark the required identification data on every kind of EWIS component as defined in 25.1701. For example, detailed identification of connector accessories, shields, clamps, cable tie devices etc… may not be practical. This was covered in the original proposal.		We agree with the commenter. The AC, as proposed, discusses this in paragraph 5.f.(4)(c). We made no change as a result of this comment.
45. Airbus	In §(7)(b)1: it is needed to mention an exception for coaxial cables as some foamed insulation	Add to this - **<u>1 Identification intervals.</u>** Wires and cables	We agree with this commenter and have revised the AC accordingly. However, the

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	cannot be marked without risk of crushing. So, at the end of the §, we propose to add: "Coaxial cables are identified at both equipment ends, at least", as it was in the original ATSRAC pro- posal.	should be identified at intervals of preferably not more than 18 inches (460mm) and should not obscure the identification markings of the EWIS component manufacturer or the routing identification markings described in paragraphs 5.f.(1)(a)2 and 5.f.(1)(c)3. Exceptions can be made for short runs of wires or cables or when the majority of the wire or cable is installed in a manner that facilitates easy reading of the identification markings. This - 1 Identification intervals. Wires and cables should be identified at intervals of preferably not more than 18 inches (460mm) and should not obscure the identification markings of the EWIS component manufacturer or the routing identification markings described in paragraphs 5.f.(1)(a)2 and 5.f.(1)(c)3. Exceptions can be made for short runs of wires or cables or when the majority of the wire or cable is installed in a manner that facilitates easy reading of the identification markings. Coaxial **cables are identified at both equipment ends, at least.**	exception for coaxial cables has been added to paragraph 7(c)(2) instead of 7(b)(2).
46. Airbus	In § (7)(c)2, wrong copy/paste. This § concerns only the (b) part as we are in the bundle identi-		We partially concur. Paragraph 7(b)(1) of the AC for 25.1711 has been deleted as this advice

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	fication part. The original ATSRAC proposal should be retained (see (a)3): "Routes or bundles identification coding used on aircraft must be identified by adequate means such as labels, tags, placards, colored ties, bar codes."		belongs only in paragraph 7(c)(2).
47. Airbus	AC for §25.1713: Airbus proposes to modify paragraph (2)(a) in this AC, for the following reasons: • Paragraph (2)(a) refers to §1.1 of an unidentified document. We assume it is 14 CFR Part 1, §1.1. The definition of "fire resistant" does not specify how long the component is required to perform its intended function under heat/fire conditions. • Furthermore, in the original proposal, there was a note to cover Fiber optic cables. Without this note there is no requirement to cover the flammability or self-extinguishing of such optical cables, when their "insulation/jacket" is subjected to the same environmental heating.		Paragraph 5.g.(2)(a) does refer to 14 CFR section 1, and we have clarified that in the final AC. Paragraph 5.g.(2)(b) states that EWIS components immediately outside fire zones should not suffer damage that could hazard the airplane if the surface of the firewall adjacent to the fire is heated to 1100°centigrade for 15 minutes. Although § 1.1 does not specify a time, the 15 minutes is based on the meaning of “fireproof” as described and is well established within the aviation industry (e.g., EASA CS-1 does define fireproof using the 15 minute standard). It has been the practice in the past to treat components directly adjacent to the firewalls the same as components within the fire zone

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
			itself. We made no change as a result of this comment. Fiber optics are not covered by the definition of EWIS (25.1701), therefore 25.1713 does not apply to fiber optics. No change is made based on this comment.
48. Airbus	AC for §25.1719 (now 25.1705): • Typo: replace "25.179(a)" by "25.1719(a)" • The AC could benefit from further developments explaining which organization or work sharing is expected for EWIS certification. Indeed this paragraph calls for consideration of EWIS in the frame of other systems certification, whereas AC 25.1701 suggests EWIS is expected to be certified as a system in itself, which appears contradictory.		We thank the commenter for pointing out this typo. The number of this rule has been changed to 25.1705. EWIS is to be treated as a system. However, this does not preclude the “EWIS system” from being considered as part of another “airplane system.” This is the intent of § 25.1705. This rule is recognition that subpart H cannot capture each and every EWIS requirement as it relates to other requirements. As stated in the AC, these other requirements may address EWIS in an indirect way. EWIS and other systems all work together in an integrated manner. Some requirements are easily applied to EWIS alone, while others are not. We have made no

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
			change as a result of this comment.
49. Airbus	AC for §25.1721 (now § 25.1717): • The original ATSRAC proposal (25HAC/ACJ1719) contained an important advice on CB frequent actuation, which is now missing. • One part of the original ATSRAC proposal (25HAC/ACJ1720) contained an important advice on CB used as a switch, which is now missing.		We agree with this commenter. The guidance referred to, concerning using circuit breakers as a switch, is contained in Advisory Circular 25.1357-1A.
50. Airbus	AC for §25.1723: Delete this AC as it is proposed to move the referenced paragraphs to the collector §25.1719	Delete - **k. <u>§ 25.1723 INSTRUMENTS USING A POWER SUPPLY: EWIS.</u>** This section requires that EWIS components associated with flight and navigation instruments using a power supply be designed and installed so that compliance with § 25.1331 is ensured. This means that EWIS associated with these systems must be considered part of those systems and given the same design and installation considerations as the rest of the system.	As discussed in the final rule preamble, we have removed § 25.1723. The reference to § 25.1331 is now in § 25.1705.
51. Airbus	AC for §25.1727: In § (1), at the end of the last sentence, add "when distance between both is smaller than …". A tolerance for such requirement would be required as some fuel lines are inside the	Add to - 5.m.(1)" …If the structure does not afford adequate protection, other protection means such as a mechanical guard should be provided. When	The intent of this is to advise against routing of wires between fuel lines and the aircraft skin within the same plane. This is to minimize the possibility that

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	fuselage.	EWIS is close to sharp metal edges, the edges should be protected by grommets to prevent chafing. Additionally, wires should not be routed between aircraft skin and fuel lines. The following - 5.m.(1)" …If the structure does not afford adequate protection, other protection means such as a mechanical guard should be provided. When EWIS is close to sharp metal edges, the edges should be protected by grommets to prevent chafing. Additionally, wires should not be routed between aircraft skin and fuel lines when distance between both is smaller than…"	movement of cargo or baggage could possibility damage the fuel line and EWIS and cause a fuel fed fire. To clarify this we have revised this sentence to read: "Additionally, wires should not be routed between aircraft skin and fuel lines within the same plane."
52. Airbus	AC for §25.1729 (now § 25.1723): In the last § replace "as explosion proof…..industry standard" by "as to minimize risks of arcing or sparking". This new requirement as written was never discussed and will ask for numerous new component developments without any justification.	Change - The airplane manufacturer defines fuel vapor zones. EWIS components located in fuel vapor zones should be qualified as explosion proof in accordance with Section 9 of RTCA Document DO160 or EUROCAE ED-14, "Environmental Conditions and Test Procedures for Airborne Equipment," latest approved revision or other equivalent approved industry standard. The possibility of contamination with flammable fluids due to spillage during maintenance action should also be considered.	The advisory material as written was proposed by the ATSRAC to the FAA. The AC does contain the words "…or other equivalent approved industry standards." This statement makes for allowances for compliance with § 25.1723 if the applicant proposes to qualify EWIS components to a standard different than the RTCA or EUROCAE documents referenced in the AC. We have, however, added some

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
		To – The airplane manufacturer defines fuel vapor zones. EWIS components located in fuel vapor zones should be qualified as to minimize risks of arcing or sparking. The possibility of contamination with flammable fluids due to spillage during maintenance action should also be considered	clarification to the AC in recognition of the fact that some EWIS compoents cannot be tested for being explosion proof.
53. AIA/GAMA	AIA/GAMA comments that paragraph 5.f.(7) Types of EWIS component identification is inappropriately prescriptive, and asks why guidance calls for an interval of 15 inches for one and 18 inches for another. The commenter says the means cited are publicly available as SAE specifications, and their incorporation as MOCs leads to inappropriate attempts to mandate the AC guidance. The commenter gives as an example wiring in the nacelle, which is frequently grouped into harnesses, each harness being an LRU, and covered with a sleeve. AIA/GAMA says that mandating the identification of individual wires as in the AC will provide no maintenance benefit but add compliance costs.		The AC material is guidance, and not mandatory. We reference SAE documents as acceptable practice because these documents represent industry (including the FAA) accepted methods of marking and identifying EWIS components. The reason for giving the two different labeling intervals (15 inches for EWIS component manufacturing marking and 18 inches for airplane manufacturer marks) is to help ensure that the two different sets of markings do not obscure one another. Wires and harnesses both need to be identified. The reasons for this

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
			are described in the advisory circular. We made no change as a result of this comment.
54. AIA/GAMA	Re: § 25.1727 (now § 25.1721) AIA/GAMA states that the proposal to provide a mechanical guard to prevent EWIS being used as a handhold is inappropriate. The commenter claims this will reduce visibility of EWIS and is likely to lead to chafing.	Remove reference to providing a mechanical guard. It does not matter if the EWIS located in the compartment is associated with a flight critical or essential system or a passenger convenience system, such as an IFE system. Failure of an EWIS component, no matter what system it is associated with, could cause a fire or other type of damage to aircraft systems or structure. EWIS in general and wiring in particular should be installed so the structure affords protection against its use as a handhold and damage from cargo. Wires and wire bundles should be routed or otherwise protected to minimize the potential for maintenance personnel stepping, walking, or climbing on them. Wire bundles should be routed along heavier structural members whenever possible. If the structure does not afford adequate protection, other protection means such as a mechanical guard should be provided. When EWIS is close to sharp metal edges, the edges should be protected by grommets to prevent chafing. Additionally, wires should not be routed between aircraft skin and fuel lines.	We don't agree that mechanical guards for EWIS, provided to prevent damage, will result in lower visibility of EWIS and lead to chafing. When EWIS is located in an airplane zone where it is likely that maintenance personnel could use the wire bundle as a step or a hand hold, good design practice dictates that the EWIS installation provide adequate protection. Visibility and chafing issues should be taken into account when designing such protection. In fact, this is required by § 25.1727, as well as § 25.1719, Accessibility provisions: EWIS. We made no change as a result of this comment.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
55. AIA/GAMA	Re: § 25.1737 (now § 25.1731) AIA/GAMA states that the guidance of "separately routing fire detection system wiring" is based on an incorrect understanding of fire detector system logic. Separate routing of the loops, as proposed, would greatly reduce the capability of the system to detect a fire, since it would require a much more extensive fire to heat the two separated loops than a conventional dual-loop configuration.	Delete first sentence of paragraph**.** **r. <u>§ 25.1737 POWER PLANT AND APU FIRE DETECTOR SYSTEMS: EWIS</u>.** To minimize occurrences of nuisance fire warnings, consider separately routing fire detection system wiring within the fire zone to allow optimal routing and ease of replacement. Exercise particular care regarding the environmental qualification of the system connectors (fire resistance, resistance to moisture and fluids etc.).	This AC material reflects the guidance proposed by ATSRAC and, as such, represents good design practice with regard to installation of EWIS associated with powerplant and APU fire detector systems. If a particular fire detector system design requires routing of the wire together, the AC allows for this, since the AC states that separation of the wire should be "considered." We made no change as a result of this comment.
56. AIA/GAMA	AIA/GAMA is concerned that this guidance could be interpreted to mean that the manufacturer and not the certificate holder is responsible for maintaining electrical loading for every airplane. It notes that the guidance doesn't say that the certificate holder must maintain a current electrical load analysis. The commenter requests that we revise paragraph 7, page 46 to limit the information provided by the manufacturer to the as-delivered electrical load analysis and instructions on methods the certificate holder could use to maintain their	Revise paragraph 7, page 46 to limit information provided by the manufacturer to the as-delivered electrical load analysis and instructions on methods the certificate holder could use to maintain their electrical load analysis.	We have revised the AC to make clear that the airplane manufacturer is responsible for the electrical load data for the "as delivered" airplane. It is the responsibility of future modifiers to update that data when a modification requires it to be revised.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	electrical load analysis.		
57. General Electric	General Electric comments that they agree that the concepts of wire identification and separation (i.e., the proposed §§ 25.1709 and 25.1711) provide benefit. However, the guidance is unduly prescriptive, and increases the burden to the industry far past the point where the safety intent would be achieved.		This guidance is not mandatory and does not prescribe any requirements. It gives guidance on one way, but not the only way, of complying with requirements. We made no change as a result of this comment.
58. Boeing and AIA/GAMA	Boeing and AIA/GAMA comment that the discussion of §25.1703(d) states that the rule is proposed to ensure that "all practical means" are used to prevent damage due to fluid contact. They note that one could interpret this guidance to mean that multiple means must be used, whereas another interpretation could be that all practical means must be considered and the most appropriate method used to address potential fluid impinging on wiring. For purposes of clarification, Boeing requests that the term "used" be changed to "considered." (This also applies to use of this phrase in proposed Advisory Circular (AC) 25.17XX, "Certification of Electrical Wiring Interconnection Systems on		This rule is meant to require that all practical means be considered and the most appropriate method used to address potential damage from fluid contact with EWIS components. We have revised the AC to clarify this.

	DISPOSITION OF PUBLIC COMMENTS AC 25.1701-1, CERTIFICATION OF ELECTRICAL WIRING INTERCONNECTION SYSTEMS ON TRANSPORT CATEGORY AIRPLANES		
Commenter	**Comment**	**Requested Change**	**Disposition**
	Transport Category Airplanes.”)		