Clearance Comments Disposition
These are from the Second Clearance Comment period for this AC

Item No:	Page and Paragraph No:	Comment:	Reason:	Recommendation:	Disposition:
1.	Page i AC No.	Since this AC replaces both AC 33.28-1 and AC 33.28-2, update the AC number to reflect the combined end number. (Khailaa Hosny, ACE-118C)	Clarification	Change AC No. from "33.28-1A" to "33.28A"	Complied with the commenter's intent
2.	**Page i, Para 2.b.**	**From the first sentence in the paragraph, delete type from the phrase designated engineering type representatives. (K.Brane, ACE-118A)**	**Correct terminology for DERs.**	**Incorporate comment.**	**Agreed**
3.	Page ii, Para 2.d.	The paragraph appears to indicate that there is no guidance for reciprocating engines apart from those installed in CAR 3 or Part 23 aircraft. (K.Brane, ACE-118A)	The phrasing appears to indicate that there is no current guidance for reciprocating engines installed in any other aircraft.	I would suggest adding specific exclusions for Part 25, 27 or 29 installation eligibilities or state that project specific policy is necessary for such engines.	Paragraph has been deleted

4.	Page ii Section 3. a.	Related Regulations are missing important Part 33 Sections. (Khailaa Hosny, ACE-118C)	Sections: 33.29, 33.65, 33.66, 33.67, 33.69, and 33.73 are inextricably linked to requirements for Engine Control systems.	Add: 33.29, 33.65, 33.66, 33.67, 33.69, and 33.73 to related regulations.	Agreed
5.	Pages: ii and iii Sections 3. b., and 3.c.	The following AC(s) call attention to other industry references and SAE ARP(s) that are already referenced in Section 3.d.: AC 20-115B, AC 20-136A, AC 20-152, AC 20-158, and AC 21-16F. For the purpose of this document, it is more efficient to remove these AC(s) from Section 3. (Khailaa Hosny, ACE-118C)	These AC(S) were published as interim policies to enable use of industry, and SAE standards in certification, Since this AC enables the use of those standards consider deleting them. This also can help in cutting out the amount of documents that the applicant needs to review to comply with the regulations.	Delete "AC 20-115B, AC 20-136A, AC 20-152, AC 20-158, and AC 21-16F" from Section 3.b. as Related References.	Disagree, these still apply
6.	Page Viii, Section 4. Kk	It is not clear if the definition of Unsafe Condition is intended only for reciprocating engine and why only just during certification? Why "EEC Systems" is used in the text, instead of EECS, which is previously defined. EEC is not defined in the document. (Khailaa Hosny, ACE-118C)	Clarification	Consider re-writing for clarification.	Agreed

7.	Page viii, Para 5.a.	Add 33.35 and 33.53 to cover reciprocating engine fuel systems and component tests. (K.Brane, ACE-118A)	Cited regulations only cover turbine engines.	Add additional regulatory references.	Agreed
8.	Page Viii, Section 5. a.	The sentence "…Those components, such as alternators, sensors, and actuators are regulated under other part 33 sections. May give a false impression that those component may not need to comply with 33.28 regulations. (Khailaa Hosny, ACE-118C)		Insert "also" after "are" to indicate that those components have to comply with Section 33.28 as well.	Agreed

9.	Page VIII, Section 5. b. (1), line 4	The paragraph states: " this AC applies to functions integrated into the EECS, but only to the extent that these functions affect compliance with part 33. The sentence is not concise and opens the door to allow for ignoring critical safety gaps representing interfaces between the engine and the aircraft. (Khailaa Hosny, ACE-118C)	The statement indicates that some of the functions integrated into the EECS, may not be addressed during engine certification, which can introduce holes, in our safety programs, that can result in bigger issues, specially with increased digital interfaces and integration between engine control and avionic systems. For example, harnesses between engine sensors/actuators and aircraft interfaces, are often missed and downplayed during both engine and aircraft type design certifications.	Consider requiring integrated safety analysis to be conducted at the aircraft level per 23.1309 compliance requirements. Individual safety analysis (FMECA, fault trees, and safety hazards) done by the engine manufacturer to satisfy 33.75 and 33.28 requirements must be made available for conducting integrated aircraft analysis. In recent programs this need was realized, and we included the requirements for integrated safety analysis per 1309 through ELOS or Special conditions.	Disagree. The whole paragraph does clarify the intent

10.	Page VIII, Section 5. b. (3),	The paragraph mentions that introduction of electronic engine control technology entails increased engine and aircraft integration that increased the risk for common mode failures that can impact more than one engine, and has indicated that the purpose of the AC is to provide additional design precautions. The relationship of 33.28 rule, relative to the aircraft level safety assessment per 23.1309 need to be identified in order to facilitate integrated safety assessment, which need to include both top-down (fault trees) and bottom up (FMECA) at the aircraft level. (Khailaa Hosny, ACE-118C)	Guidance is good to have but may not become effective without re-thinking the root issue for dealing with certification of integrated digital systems.	Consider adding a paragraph requesting the engine safety analysis and assumptions made during engine certification be available for aircraft safety analysis and certification. Consider introducing a new engine/aircraft combined type design change process that allows comprehensive integrated engine/aircraft design change approvals only once, in order to eliminate redundant efforts to re-certify both the engine and the aircraft.	Both of these suggestions are beyond the scope of this AC. The AC cannot direct the relationship between the engine and aircraft manufacturer. The SSA material is very typically provided to the airframer anyway.
11.	Page 1, Para 1.1, 1-2, 1-3, and 1-6	Change the word airplane to aircraft in five locations. (K.Brane, ACE-118A)	The text makes reference to Parts 27 and 29 as well as 23 and 25, therefore aircraft is more appropriate.	Convert to aircraft such that airplanes and rotorcraft are both covered.	Agreed

12.	Page 2, Para 1-7	The paragraph make an open ended statement regarding TCDS limitations for reciprocating engines, but provides no escape in the event that commuter category or Part 25 aircraft approvals are necessary (K.Brane, ACE-118A)	There needs to be coverage for the "what if" an approval is necessary for commuter category or Part 25 aircraft.	Provide an out for the limitation even if it is a statement regarding project specific policy.	Paragraph has been deleted
13.	Page 3, Para 2-2.a.	The use of hydromechanical in the first bullet may allow an interpretation that is overly strict on the applicability of 22.28 to "traditional" reciprocating engine control systems when sections of 33.35 and 33.37 are more appropriately used. (K.Brane, ACE-118A)	The applicability to "traditional" systems may cause a regulatory burden that results in no increase in safety. Please note that if not adopted in the applicability section, some additional limitations in other sections of the AC may be necessary as 33.53 is used throughout.	Add disclaimer for systems on recips that are adequately covered through 33.35 and 33.37.	Agreed

14.	Page 3, Section 2-2. b.	At the end of the paragraph it is stated that: Some components, such as a throttle position transducer, may be mounted in the aircraft and not part of the engine type design but are dedicated to the engine control system and powered by it. Such elements are integral components of the ECS. Q. What is the significance of considering a component be integral to the ECS, but not part of the engine type-design? And vise versa a component excluded from ECS, such as engine fuel pump", but is part of the engine type design? (Khailaa Hosny, ACE-118C)	In today's certification practice, EECS(s) certification is compromised. It is dealt with as fragmented approvals, lacking focus on the technical aspects of the control function of the system. As some parts are approved through engine certification, and others are approved through aircraft certification, or even software certification. Those assumed boundaries, encourage silos, and may lack to address safety of the integrated function in the aircraft in real environment.	Consider a matrix approach for certification oversight of EECS systems, in which certification and airworthiness of the EECS are handled independently from engine certification, but runs in parallel with engine and aircraft certifications and include the following integrated certification activities: a. Engine performance b. Propeller performance c. Aircraft performance d. Software certification e. Architect/configuration This will allow proper integrations with both the engine and the aircraft. Without recertification of the engine, when not needed. Also it would allow for innovative flight controls that would simplify and control all flight functions simultaneously, and thus reduce pilot load, and provide proper mitigation to all failures on the aircraft including control surfaces and engine power.	This is beyond the scope of an AC to change the overall certification process.
15.	Page 4, Section 3-2.	Delete "(1)" from: "§ 33.28(b) (1)…" Error repeated 3 times in each of 3-2. b., 3-2. C. and 3-2. d.	Typo errors.		The commentor is wrong. The (1) does belong in each of these references.

16.	Page 8, 2	The paragraphs reads "Ensure that all wire bundles between EECS components and from EECS components to the airplane have overbraid shields. The shields should cover power and signal wires and their returns," Q1) It is not clear if the min test levels for system laboratory for both HIRF and Lightning Are based on shielded cables as explained in this section. (Khailaa Hosny, ACE-118C)	Clarification: Are we trying to standardize and lower the cost of certification tests, if the applicant adheres to good design practices, including overbraid shields? What if these design concepts were not followed? like no overbraid shielding, Are we back to full blown testing? Or as appropriate to risk accepted for small aircraft?		This was done in coordination with industry to provide an alternate path to approval that simplifies the complex process that is required otherwise. The configuration requirement was part of the compromise.
17.	Page 9, (5) (a)	The paragraph reads: (a) For turbine engines: a change greater than 3% of most sensitive operating point or 1% of take-off power and/or thrust, whichever is greater, for a period of more than 2 seconds. Do you really mean , whichever is greater", or you meant ", whichever is less. (Khailaa Hosny, ACE-118C)	Typo error.		"…is greater," is correct

18.	Page 15, (6)(a)	Remove (1) from § 33.28(c)(1)(iii), (Khailaa Hosny, ACE-118C)	Typo error.		It is correct as shown.
19.	Page 16 item 6-2 and page 17 item 3 (c) or comparable section of the AC addressing 33.89 MCO	Add NOTE: Variable stator vane [Inlet Guide Vane] (IGV) off-design point scheduling (miss-scheduling) is sometimes influenced by an unintended FADEC software program. This condition has been known to have a significant adverse impact on fan blisk life.	To add a cautionary awareness and bring this configuration to the attention of individuals involved in testing and continued operational safety.		This section is addressing LOTC/LOPC considerations. A lifing note would be inappropriate.
20.	Page 17, 6-2 b. (2)(a)	Industry practice over the past 20 years have accepted that a 10% of power or thrust loss, as no event. This loss may result in sudden loss of altitude as well, pending aircraft flight control reaction. We need to verify that any altitude loss due to such accepted practice is in line with the minimum vertical separation proposed for the new Next gen traffic system. (Khailaa Hosny, ACE-118C)	This is to avoid cascading aircraft crashes, under normally accepted thrust losses. When moving to busy airspace traffic through next gen.	Include a criteria to monitor altitude losses during less than 10% loss in thrust.	This suggestion goes beyond the engine scope of certification.

21.	Page 18, Para 6-2. b.(4)(c)	This section is for reciprocating engines, but make reference to 33.89, turbine engine operations test. Correct reference should be 33.51, reciprocating engine operations test. (K.Brane, ACE-118A)	Correct rule applicability.	Change 33.89 to 33.51.	Agreed
22.	Page 18, Section 6-2 d. (1)	The paragraph states that: "For turbine engines. The EECS should not cause more than one LOTC/LOPC event per 100,000 engine flight hours." (Khailaa Hosny, ACE-118C)	The EECS by itself is rarely involved in LOTC/LOPC. And when it is involved, it is usually in reaction to engine malfunction, or external event in order to protect the engine and flight safety.	Consider expanding on this paragraph to identify the nature of the errors that cause problems. Such as: integration, interfaces, assumptions made during design. This is to emphasize the importance of integrated safety analysis that account for all sources of potential problems. I know more details are provided in the back of the document, but I just would like to emphasize the inherent challenge to oversee such critical systems from the beginning. This is to show that oversight of this highly integrated system need to involve expert knowledge of multiple certification engineering disciplines that need to interact together to adequately address aircraft safety.	The overall document sufficiently addresses this subject.
23.	Page 19, Section 6-2 e.	Add a bullet for "Failure Mode and Criticality Analysis" (Khailaa Hosny, ACE-118C)	Reliability of specific failure modes are identified from this analysis.		This would go beyond the reference document's scope
24.	Page 19, Section 6-2 f (2), last sentence.	Insert "Wiring harnesses" as part of the components that should be included in the LOTC/LOPC analysis. (Khailaa Hosny, ACE-118C)	This is to emphasize the important of wiring harnesses to be included in the analysis, as they are a main problematic area often missed in applicant analysis.		Agreed

25.	Page 31, paragraph 8-2b(3)	"..the applicant should show for part 25 installations, or for part 23 installations certified to part 25..." This is an incorrect statement. (M. S. Orr, ACE-114)	We do not mix aircraft installation certification requirements across parts 23 and 25.	Revise to read: "...the applicant should show for part 23 or part 25 installations..."	Agreed
26.	Page 32, paragraph 9-2a(2)	"However, we have not required dissimilar designs..." Dissimilar to what? I believe you may be speaking to multi-engine aircraft and not requiring dissimilar software between the engines on these aircraft, but that is not specified at all in the context of this paragraph. (M. S. Orr, ACE-114)	Missing context for statement.	Rewrite paragraph to include the context necessary for this statement.	Agreed
27.	Page 32, 9-2 C.(1)(a)	Part 23 is missing In the following sentence: "Design, implementation, and verification of software in accordance with Level A (DO-178B) is normally needed for aircraft certificated under part 25, part 27-Category A, or part 29-Category A." (Khailaa Hosny, ACE-118C)	Typo error.		Agreed, fixed

28.	Page 36, paragraph 10-2b(3)	"…LOPC, such as a minor loss, are not unacceptable…" employs a double negative. (M. S. Orr, ACE-114)	Double negatives are difficult to understand on first reading and could lead to confusion.	Rewrite to eliminate the double negative.	Agreed
29.	Page 38, paragraph 10-2c(4)	"…critical control functions, then the engine applicant must require recognize that…" Which do you want them to do, require that or recognize that? (M. S. Orr, ACE-114)	Conflicting words.	Rewrite to keep only the word necessary to convey the correct intent.	Agreed
30.	Page 44, Para 11-2.d.(4)(c)	Add an additional bullet item; for battery systems, a requirement for the available duration of the battery source which is in excess of that of that available for the primary flight displays in an event of a loss of aircraft power. (K.Brane, ACE-118A)	There appears to be no capacity requirements stated for battery backup systems and these systems are not specifically cited in aircraft level regulations. Engine operation should be maintained with a safety margin over primary flight displays.	Add capacity requirement for backup power supplied by batteries.	Agreed

31.		Many Military Specifications and Standards are now cancelled or superseded by other documents. For example, MIL-E-5007 has been replaced by the JSSG-2007. While it may have MIL-STD-810 there it doesn't seem to have the others. (Douglas N Bryant/ANM/FAA)	I understand that many of the engines today were developed using the older standard and keeping reference to it is important. The comment I have is the website you listed for finding those documents is the Army's Defense Technical Center URL.	You may want to consider the below URL instead. http://dodssp.daps.dla.mil	Agreed
32.		Many Military Specifications and Standards are now cancelled or superseded by other documents. For example, MIL-E-5007 has been replaced by the JSSG-2007. While it may have MIL-STD-810 there it doesn't seem to have the others. (Douglas N Bryant/ANM/FAA)		I'm also not sure there is a rev E of MIL-E-5007, the latest I could find was rev D with amendment 2 on 10-8-1982 and amendment 3 on 12-27-1995.	Agreed
33.	Pg1, Para 2.b., 4th sentence	The sentence starting:... "Terms such as "should..." This is confusing. Can we say "...are not mandatory or contractual but simply state that these methods are acceptable."? (ANE-140)			This is standard boilerplate. Not changed

34.	Pg 4, Para 3-2.c., 4th sentence	The term "continuous positive relationship" is not clear. Is this intended to mean a positive linear movement of the throttle? (ANE-140)			Agreed
35.	Pg 7, Para 4-2.d.(1)(b), last sentence.	The sentence ending "...with the same shielding and electrical bonding configuration." Does this imply a specific shielding that is different from RTCA/DO-160F? If not, add the para reference from DO-160F here and in other similar instances. (ANE-140, W. Maguire)			Clarification has been provided.
36.	i. 1.	Should 33.28-1A replace 33.28-2 which focuses on recips? (ANE-140, W. Maguire)	33.28-2 is needed and widely used by the recip community.	Do not replace 33.28-2	This has been resolved. -1 and -2 will not be deleted. This AC will be -3
37.	ii. 2.d.	Part 27 & 29 are not included (ANE-140, W. Maguire)	Why omit?	Include Part 27 & 29, and do not limit to Part 23.	Paragraph has been deleted
38.	1&2 1-7	Why? and not Part 27 or 29 (ANE-140, W. Maguire)	REVISIT... I don't understand		Paragraph has been deleted
39.	???	REMINDER, cert of B/U modes (ANE-140, W. Maguire)	May have recip operators fly in B/U longer than expected	I need guidance.	As described in paragraph 5-2 these back-up modes are not considered to be dispatchable and thus they should not be used for long periods.

40.	3 2-2.b.	Add "fuel rack" in 2nd sentence. (ANE-140, W. Maguire)	Fuel rack position is key variable in recip ECSs.	Insert "fuel rack" just ahead of fuel metering unit(s).	Agreed
41.	7 4-2.d.1.c.&e.	No mention of recips on rotorcraft (ANE-140, W. Maguire)	Rotorcraft overlooked?	Include guidance for recip powered rotorcraft.	Agreed
42.	10 (5)(b)	Compare " For reciprocating engines: a change greater than 10% of most sensitive operating point or 3% of take-off power and/or thrust, whichever is greater, for a period of more than 2 seconds." to 33.28-2 (ANE-140, W. Maguire)			No change
43.	Installation Req'ts, Operational Requirements, Certification Interface Document	(ANE-140, W. Maguire)			No change
44.	P.10,10(c)(4)	Confusing wording in first sentence; " ... applicant must **require recognize** that the aircraft ... "	Grammatically confusing wording.	Remove the unintended wording.	Agreed

45.	General	The use of hazardous engine effect as a regulatory criterion ignores the primary reason for the engine controls function: operate the engine within its certificated limits and a safe and reliable manner. (Peter Rouse, ACE-111)	Hazardous engine effect per 33.75g considers loss or power or thrust minor. The treatment of loss of power or thrust as minor is minimizing the basic function of an aircraft engine. The engine's primary purpose is to propel the aircraft. If the primary purpose of the engine is to show that it is not an unsafe condition when installed, then an engine would be installed into aircraft under a "no hazard" basis and would not be required equipment. The 33.75g hazardous engine effect criteria is myopic, and then this criteria transitions down to design assurance and operational philosophy. This is a very big concern for the Small Airplane Directorate and is contradictory to how we've tried to leverage off of part 33 for part 23 EECS installation requirements.	The rule, 33.28, and its guidance should emphasize that their intent is to ensure that the engine performs its intended function in a reliable and safe manner through the use of robust design criteria and best practices. When discussing the performance criteria that constitute an acceptable means of compliance, the allowable LOPC/LOTC rates should also be referenced. Thus the criteria would read something like this: "The result of failure of XXXX would not result in a hazardous engine effect and a LOTC/LOPC that exceeds the allowable rates in table XX thru XXX."	Does not apply

46.	2.b. Page i	The statement: "On the other hand, if we become convinced that following this AC would not result in compliance with the applicable regulations, we will not be bound by the terms of this AC, and we may require additional substantiation as the basis for finding compliance " is basically saying the acceptable means of compliance is not the acceptable means of compliance. (Peter Rouse, ACE-111)	The AC is putting forth the acceptable means of compliance, and the statement is contradictory.	There should be a qualifier on the statement on the order of: "If an electronic control system contains new and novel features, outside of the scope envisioned by this AC, and following this AC would not result in compliance with the applicable regulations, we will not be bound by the terms of this AC, and we may require additional substantiation as the basis for finding compliance. "	Adequately addressed
47.	2.d. Page ii	Why is there a separate paragraph for reciprocating engines? (Peter Rouse, ACE-111)	The AC addresses electronic engine controls, and it supersedes both AC33.28-1 and AC33.28-2.	Please remove the specific reference to reciprocating engines, as the AC is for all electronic engine control systems. The specific means of compliance methodologies can be addressed in the body of the AC.	There are specific factors that apply to recips only
48.	3.b. Page iii	FAA Policy PS-ACE100-2004-10024, Installation of Electronic Engine Control for Reciprocating Engine is not referenced. (Peter Rouse, ACE-111)	The policy is the part 23 installation policy for reciprocating engine FADECs.	Please add the reference.	Agreed
49.	4. Definitions Page v	There is no definition of Automatic Power Reserve (APR) System. (Peter Rouse, ACE-111)	APR is used in part 23, Appendix H in the same manner as part 25, Appendix I.	Please add the definition.	Agreed

50.	4.x. Page vii	The term EEC is used instead of EECS, as defined earlier in the section. (Peter Rouse, ACE-111)	This is a minor comment, but it speaks to consistent use of terminology.	Be consistent in the use of terminology.	There is a distinct difference between EEC and EECS
51.	4.cc. Page vii	There is a definition for Minor Power Loss, yet no definition of Minor Thrust Loss is included. (Peter Rouse, ACE-111)	The threshold for power of thrust loss is used as a means of compliance. We have used specific thrust loss amounts for sensor drift allowances.	Please include a definition of Minor Thrust Loss.	Minor Thrust Loss is not used
52.	4.kk. Page viii	The tables cited (A3-1 and A3-2) only address the reciprocating engine failure rates. Why are there no commensurate tables for turbine engines? (Peter Rouse, ACE-111)	The AC speaks to this in the body, and also in Policy Memorandum, PS-ANE100-2001-1993-33.28TLD-R1, Policy for Time Limited Dispatch (TLD) of Engines Fitted with Full Authority Digital Engine Controls (FADEC) Systems.	Please include LOTC and destructive event tables for turbine engines in the manner of the reciprocating engines.	The handling of the recip engines is different than turbines and this is one of those differences.
53.	Chapter 1, 1-4 Page 1	The paragraph speaks to failure rates, but doesn't address the basic part 33 failure rates in tables A3-1, A3-2 and the recommended commensurate turbine engine failure rates. (Peter Rouse, ACE-111)	The engine control system can only perform as well as it is certificated. I believe that the intent is to have the installer determine if part 33 failure rates are acceptable to installation, and not have the installer define the part 33 failure rates.	Please clarify the intent of this paragraph. The failure rates should meet the guidance in the body of the AC: 10 failures per million flight hours for turbine engines and 45 failures per million flight hours for reciprocating engines.	This paragraph has been deleted

54.	Chapter 1, 1-7 Page 2	Why is the recommendation, "Installation of this engine is not approved for airplanes certificated under part 23 commuter or part 25 transport categories" included in this guidance. (Peter Rouse, ACE-111)	The applicable part 23 or part 25 installation rules already define the acceptable configurations. Also, part 33, does not approve any engine for installation into an aircraft. Part 33 approval is required in order to consider an engine eligible for installation in an aircraft.	Please remove the recommendation.	This paragraph has been deleted
55.	Chapter 5, 5-2 Page 12	There is no mention of "bumpless transitions." (Peter Rouse, ACE-111)	The philosophy of "bumpless transitions" is to minimize the effects of control mode governing changes at the aircraft level.	Please include a section of the philosophy behind "bumpless transitions" and their desire to have seamless changes between control modes to the extent possible.	This is addressed in 5-2d however we do not use the terminology suggested
56.	Chapter 5, 5-2a(7) Page 13	The applicant should also include the potential effects at the aircraft level. (Peter Rouse, ACE-111)	The FAA has issued an airworthiness directive due to the transition to the alternate control mode, and its effect on the aircraft.	Please expand the section to include potential aircraft effects, or at least the engine behavioral effects so the installer can assess them for their installation.	Same 55
57.	Chapter 6, 6-2b(1) Page 16	Why is the LOPC/LOTC criteria associated with part 25 aircraft? (Peter Rouse, ACE-111)	The LOPC/LOTC criteria seem to be applicable to all turbine engines.	Please remove the narrow focus of the criteria by removing the reference to part 25 aircraft.	Agreed

58.	Chapter 6, 6-2b(1)(b) Page 16	The statement is somewhat circular logic as it indirectly references acceptable levels in the same chapter. (Peter Rouse, ACE-111)	The statement points indirectly to criteria elsewhere in the same chapter, rather than citing specific values, or a specific location for those values within the chapter.	Please cite specific values, or a specific location for those values within the chapter.	Agreed
59.	Chapter 6, 6-b(2)(b) Page 17	The statement is somewhat circular logic as it indirectly references acceptable levels in the same chapter. (Peter Rouse, ACE-111)	The statement points indirectly to criteria elsewhere in the same chapter, rather than citing specific values, or a specific location for those values within the chapter.	Please cite specific values, or a specific location for those values within the chapter.	Agreed
60.	Chapter 6, 6-b(3)(b) Page 17	There is no definitive criterion. (Peter Rouse, ACE-111)	No boundaries are placed upon the acceptable behavior in which to determine acceptability.	The engine certification should define the acceptable criteria and then that criteria should be evaluated against the installation. A basic level of behavior should be contained at the part 33 level, and then if the installation requires more, that should be identified by the installer.	This paragraph has been deleted
61.	Chapter 6, 6-b(4)(b) Page 18	The statement is somewhat circular logic as it indirectly references acceptable levels in the same chapter. (Peter Rouse, ACE-111)	The statement points indirectly to criteria elsewhere in the same chapter, rather than citing specific values, or a specific location for those values within the chapter.	Please cite specific values, or a specific location for those values within the chapter.	Agreed
62.	Chapter 6, 6-2d Page 18	These failure rates should be in the tables within the appendices, as suggested in comment #7. (Peter Rouse, ACE-111)	The failure rates should be clearly defined and not buried within the text.	Please put the failure rates in tables as suggested in comment #8.	Appendix 3 was created to assist with recip engines not turbines.

63.	Chapter 7, 7-2b(2) Page 26	These failure rates should be in the tables within the appendices, as suggested in comment #7. (Peter Rouse, ACE-111)	The failure rates should be clearly defined and not buried within the text.	Please put the failure rates in tables as suggested in comment #8.	Appendix 3 was created to assist with recip engines not turbines.
64.	Chapter 7, 7-2c(4) Page 27	What is the purpose of this paragraph? Also, how are these documented or accounted for? These events are not reportable per 21.3(Peter Rouse, ACE-111)	The paragraph looks to be accounting for partial thrust or power loss. We define major and minor power loss for reciprocating engines, why not do the same for turbine engine thrust loss, and then use that criteria for SSA purposes?	Please see comment #7. Also, some basis of determining the partial LOPC/LOTC rate should be created.	This practice has been in use for a number of years now. The fact that they are not reportable is based on the fact that they are typically not detectable. We need to assure that they are infrequent.
65.	Chapter 8, 8-2a(3)(b) Page 30	The paragraph should directly address single valve controls with no separate overspeed shutoff valve. (Peter Rouse, ACE-111)	The PWC610F and PWC615F are single metering valve controls. While not directly related to overspeed protection in this case, additional airframe shutoff valves were required for Cessna CJ510 and, unfortunately, not incorporated into the Eclipse EA500.	Suggest not allowing single valve controls, and those with common mode failures of the shutoff valves. Aircraft valve installation is not practical to accommodate failure of the engine fuel control valves.	Agreed, paragraph revised

66.	Chapter 9, 9-2c(1)(d) Page 33	The paragraph allows Level C software for non-commuter or non-transport category airplanes. (Peter Rouse, ACE-111)	This paragraph is not in accordance with the agreement between the Small Airplane Directorate, the Engine and Propeller Directorate and the Engine Controls CSTA.	Please put the language from our previous agreement: The required software and complex hardware design assurance level for an EEC system installed in Part 23 aircraft shall be as follows: Engine Type: Turbine Engine Level A Reciprocating Engine Level C	The paragraphs in 9-2 c(1) do now make this clear
67.	Chapter 10, 10-2c(1)(b)3 Page 37	The regulatory reference for this section is 33.28(h) – Aircraft Supplied Data, yet the paragraph addresses the loss of aircraft supplied power. (Peter Rouse, ACE-111)	33.28(i) is specifically concerned with aircraft supplied power.	The loss of aircraft power should be addressed in Section 11.	Agreed
68.	Chapter 10, 10-2f(3) Page 39	The paragraph is a little confusing. (Peter Rouse, ACE-111)	The degraded, or alternate, mode operation may result in the inability to achieve rated thrust, and also not meet its surge/stall requirements due to the loss of rate protection.	Please clarify the intent of this paragraph to state that the alternate modes must not result in LOPC/LOTC, unacceptable engine behavior at the engine and aircraft level.	Agreed
69.	Chapter 10, 10-2g(5) Page 40	The paragraph cites "severe" as the classification of the environmental threat. Is this terminology consistent with the classification used for design assurance level? (Peter Rouse, ACE-111)	Consistency.		Agreed, paragraph modified

70.	Chapter 10, 10-2h(2) Page 40	The paragraph is somewhat confusing. Isn't a system that changes the engine thrust of power level part of the EECS? (Peter Rouse, ACE-111)	Regardless of the invocation means, power or thrust changes are the domain of the EECS.	Please change the section to include the aircraft commanded power changes in the assessment.	No, this is based on the airbus non-moving throttle system. The throttle command system is not part of the EECS.
71.	Chapter 11, 11-2f(2) Page 45	The paragraph does not include LOPC/LOTC as a performance criterion. (Peter Rouse, ACE-111)	An aircraft AD was required to correct a voltage transient induced LOPC.	Add LOPC/LOTC as a performance criterion. See comment #1.	This case does not apply here The transient in the referenced here was much more than a low voltage transient. This was a case of an operator using an aircraft with a main battery that was basically totally depeleted. These low voltage transients are transients in normal operation.
72.	Chapter 14, 14-2 Page 50	This paragraph speaks to allowing a bad practice. (Peter Rouse, ACE-111)	The PWC610F and PWC615F are single metering valve controls. While not directly related to overspeed protection in this case, additional airframe shutoff valves were required for Cessna CJ510 and, unfortunately, not incorporated into the Eclipse EA500.	Suggest not allowing single valve controls, and those with common mode failures of the shutoff valves. Aircraft valve installation is not practical to accommodate failure of the engine fuel control valves.	This is covered by the 'result in inappropriate system operation'

73.	Chapter 15, 15-2c Page 50	The PLD design assurance level is ambiguous. (Peter Rouse, ACE-111)	The PLD design assurance level should be commensurate with the software requirements.	See comment #22.	Disagree. The PLD DAL is based on the system function requirements, not the SW