

**FAA Validation of EASA State of Design Turbine Aircraft Engines**  
**FAA Safety Emphasis Item (SEI) Summary List**  
**Per FAA-EASA Technical Validation Procedures (TIP) Revision 6.1**

**14 CFR Part 33 compared to CS-E**  
**Revision 1, Dated October 15, 2019**

<u>SEI</u>	<u>SEI Type*</u>	<u>Subject</u>	<u>14 CFR Section</u>	<u>Reference Document</u>	<u>Remarks</u>
1	(i)	Instructions for Continued Airworthiness (ICA)	33.4, A33.1(b), A33.3, A33.3(b), A33.4(a)(2), A33.3(c)	SSD No. 1.	Continue harmonization and confidence building. Non-Basic areas: 1) Incomplete ICA prior to delivery 2) Does not address all parts, i.e. only provides module/assembly level instructions, or omits overhaul instructions 3) Restrictive language on usage or availability 4) Removes repairs 5) Changes in method of compliance 6) If Time Limited Dispatch (TLD) is requested refer to SEI no. 17 for requirements.
2	(i) (ii)	Vibration Test	33.83(a)	SSD No. 8. and previous amendment interpretation	Continue harmonization and confidence building. Non-Basic areas: 1) Validated Analysis 2) Testing to less than 103% speed 3) Different interpretation of the CS-E 650 amdt 3 requirements to accept use of validated analysis
3	(ii)	Vibration	33.63	AC33.63-1	Continue harmonization and confidence building. Non-Basic area: 1) Assessment of failure modes including fan blade-case interaction, flutter, and excessive vibration stresses caused by conditions such as rotor unbalance, ice accretion, rain and hail. AC paragraphs 5.2(b), 5.3, and 5.4
4	(i) (ii)	Design & Test Requirements for Early ETOPS Eligibility	33.201	SSD No. 13 and guidance material differences.	Continue harmonization and confidence building. Non-Basic areas: 1) Compliance using AMC 20-6 Method 2. 2) Testing cover all thrust ratings 3) Calibration testing 4) Cold starts testing 5) Required testing for derivative engines
5	(i)	Induction System Icing	33.68(a), (b), (c), (e)	SSD No. 4.	New standard amendment/SSD.
6	(i)	Durability (Propeller Blade Pitch Control Systems)	33.19(b)	SSD No. 2.	Continue confidence building. Non-Basic area:

					1) If the propeller blade pitch control system is part of the engine type design.
7	(i)	Engine tests in auxiliary power unit (APU) mode.	33.96	SSD No. 12.	No prior experience.
8	(i)	Fuel Burning Thrust Augmentor	33.79	SSD No. 7	No prior experience.
9	(ii)	Additive Manufacturing	33.15	Issue Paper / AC (Draft**)	Continue harmonization and confidence building. Non-Basic area: 1) Limited to life limited parts and life influencing parts.
10	(ii)	Structural Analysis Methods for 33.94 Compliance	33.94	ANE-2006-33.94-2	No prior experience. Non-Basic area: 1) Compliance is AMC E 810 (iii) By other evidence acceptable to the Agency.
11	(ii)	Overspeed Protection Deactivation / Inhibition	33.27	Policy (Draft**)	Continue harmonization and confidence building. Non-Basic area: 1) Overspeed system is deactivated / inhibited, except for "common mode".
12	(ii)	Shaft section exclusion excluded from failure consideration, i.e. shaft prime reliable	33.27	Exemptions	Continue harmonization and confidence building. Non-Basic area: 1) New/different compensating factors from previous exemptions. Otherwise, FAA will process exemptions as part of streamline validation.
13	(ii)	OEI for Rotorcraft Engines with Multiple Power Sources	33.7	Policy PS-ANE110-2000-33.7-R0	No prior experience. Non-Basic Area: 1) No equivalent allowance in EASA's regulation and guidance.
14	(ii)	Operation in Heavy Snow	33.68	Policy (Draft**)	Continue harmonization and confidence building. Non-Basic area: 1) Operation in snow concentration >0.9g/m <sup>3</sup> . Requires applicants to determine whether they need a limitation.
15	(ii)	Development Assurance for Software & Airborne Electronic Hardware	33.28	Policy (Draft**)	Continue harmonization and confidence building. Non-Basic areas: 1) Management of Open Problem Reports. 2) Use of Multi-core Processors.  3) Formal Methods, Artificial Intelligence/Machine Learning, and MBD for hardware should be classified as new/novel technology per the TIP.
16	(ii)	Time Limited Dispatch (TLD)	33.28	1993-33.28TLD-R1	Continue harmonization and confidence building. Non-Basic areas: 1) Dispatch with loss of critical functions. CS-E 1030 (b)(3) allows loss of function such as overspeed protection, which is specifically

					prohibited for dispatch by FAA policy. 2) TLD ALS Limitation. FAA Policy requires TLD approval to be included as a limitation in the Airworthiness Limitation Section(ALS) of the engine's ICA including the revision and issued date of the report/summary.
17	(ii)	Volcanic Ash	33.75, 33.89, 33.5(b), 33.4	SAIB NE-10-28 dated April 22, 2010 and Internal FAA Guidance Memo on Volcanic Ash Disturbances dates May 25, 2010.	No Prior Experience, continue harmonization. Non-Basic area: 1) Operation into visible ash clouds. EASA CS-E 1050 may allow operation beyond current FAA safe operating practices limiting no flight into visible ash clouds and instructing post-flight actions according to manufacturers' instructions whenever operation in ash clouds is suspected.

**SEI Part 2: Per TIP 6.1 the FAA will accept EASA's finding of compliance with these items where direct compliance is shown with the listed documents and remarks. Items on this list will be accepted or processed using the streamline process as appropriate.**

<u>SEI</u>	<u>SEI Type*</u>	<u>Subject</u>	<u>14 CFR Section</u>	<u>Reference Document</u>	<u>Remarks</u>
1	(ii)	Titanium (Ti) Material Inspection Requirements.	33.15	PS-ANE-2002-33.15-R0	Requires ultrasonic (UT) billet inspection for Ti material used in the manufacture of engine rotor parts.
2	(ii)	Damage Tolerance for High Energy Turbine Engine Rotors	33.14 / 33.70	AC 33.14-1 R1 AC 33.70-3 (TBD)	Requires assessment of Sub Surface Damage Tolerance Ti Rotors Material Anomalies.
3	(ii)	Fire Testing – Burner	33.17	AC 20-135	Requires testing with Kerosene. No equivalent EASA policy. EASA CRI permits the applicant use of either a Propane or Kerosene fuel burner.

**Notes:**

- 1) In accordance with the Technical Implementation Procedures for Airworthiness and Environmental Certification between the Federal Aviation Administration of the United States of America and the European Aviation Safety Agency of the European Union, Revision 6.1, dated June 22, 2018, (TIP Rev 6.1), the FAA here prescribes Safety Emphasis Items to provide a level of safety equivalent to that provided by 14 CFR part 33.

**\* TIP Rev 6 SEI Types (Categories):**

- (i) *New VA standards or certain SSDs where the VA or CA has limited past experience with the application to a product, they have an important impact on the whole product or a critical feature, and engineering judgment is required to establish compliance;*

Only those SSDs that meet the noted criteria should be identified as SEI. The expectation is that the majority of SSD are well understood by both authorities, with full confidence given to the CA for determining compliance to those VA SSDs.

- (ii) Airworthiness standards where the VA's and CA's interpretive, advisory, MOC, or guidance materials differ or are insufficient, to an extent that those differences impact the level of safety required by the VA system and could result in VA required changes to the type design or approved manuals. As experience is gained, the VA may choose to reduce the application of this criterion to minimize non-basic applications. When interpretive, advisory, MOC, or guidance materials are well understood by both authorities; full confidence should be given to the CA for determining compliance to those VA SEIs.
- (iii) Items identified for special emphasis by the VA in a data-driven risk assessment analysis for the product class; and
- (iv) Subjects linked to known safety conditions that the VA has identified, and for which the VA either has taken, or is in the process of taking, airworthiness action.

\*\* Policies and Advisory Circulars not yet published are labeled as "Draft". Additional details on requirements/applicability can be found on FAA public webpage for [Engine & Propeller Issues List](#). Consult Engine & Propeller Standards for any additional questions.

[https://www.faa.gov/aircraft/air\\_cert/design\\_approvals/engine\\_prop/issues\\_list/](https://www.faa.gov/aircraft/air_cert/design_approvals/engine_prop/issues_list/)

SEI Revision	Date	Changes
Rev. 0	March 22, 2018	Initial Issue
Rev. 1	October 15, 2019	Removed Induction System Icing P2T2 Probes from Part 1 Removed Core Bird Ingestion - Climb Condition from Part 1 Removed Power & Thrust Response from Part 1 Added Time Limited Dispatch (TLD) to Part 1 Added Vibration (33.63) to Part 1 Added Volcanic Ash to Part 1 Added Fire Testing – Burner to Part 2 Updated ICA remarks for clarity

Approved by: **ROBERT J GANLEY**  
 Digitally signed by ROBERT J GANLEY  
 Date: 2019.10.18 07:13:38 -04'00'  
 Manager, Engine and Propeller Standards Branch, (AIR-6A0)  
 Policy and Innovation Division  
 Aircraft Certification Service

File: SEI\_Turbine\_Engines\_List\_14\_CFR\_33\_and\_CS-E\_Rev\_1\_October\_15\_2019.docx