

**Proposed Special Condition
OEI High Ambient Take-Off Temperature rating
Applicable to turbine Engine for the approval of an additional rating**

Comment Response Document

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #1:	General Comment
Special Condition item: Title of Proposed Special Condition	
Comment: Suggest that the rating be named “Rated OEI Takeoff Thrust at High Ambient Temperature” instead of “OEI High Ambient Take-Off Temperature rating”. Suggested name is consistent with existing OEI engine ratings.	
EASA response: Partially Accepted. EASA acknowledge that in CS-Definitions some OEI ratings have been named “Rated...”. CS-E 40 listed all the OEI ratings as per “Time OEI...” In order to be in line with the CS-E it is EASA opinion to rename this rating as “10 Minutes OEI Take-off Thrust at High Ambient Temperature”.	

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #2:	General Comment
Special Condition item: SC section: “Statement of Issue”, “Discussion” and “EASA Position”	
Comment: The SC contains a “statement of issue”(SOI) and a “discussion” section, followed by the EASA position section. Some statements in the SOI and discussion sections are either in conflict with EASA’s position, or they are not carried forward in EASA’s position. No explanations are provided for the differences between these sections.	
EASA response: Partially Accepted. The revised version of the Special Condition took into account this comment.	

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #3:	General Comment
Special Condition item: Proposed Special Condition	
Comment: The SC contains a “statement of issue”(SOI) and a “discussion” section, followed by the EASA position section. Some statements in the SOI and discussion sections are either in conflict with EASA’s position, or they are not carried forward in EASA’s position. No explanations are provided for the differences between these sections. Specifically:	
(i) Page 2: “Every single usage of the OEI rating will be followed by an adequate engine servicing within a maximum cumulated usage of 10 minutes.”	
However, EASA’s position does not require maintenance after “every usage of the OEI rating”	

EASA response: Accepted.

The wording in the published SC “Every single usage of the OEI” was erroneously used therefore it is deleted. Usage of this rating as been clarified in the revised SOI section.

Committer:	FAA Engine and Propeller Directorate Standards Staff
Comment #4	General Comment
<p>Special Condition item: Proposed Special Condition</p> <p>Comment: The SC contains a “statement of issue”(SOI) and a “discussion” section, followed by the EASA position section. Some statements in the SOI and discussion sections are either in conflict with EASA’s position, or they are not carried forward in EASA’s position. No explanations are provided for the differences between these sections. Specifically:</p> <p>(ii) Page 3: paragraph titled “Endurance Tests” (Discussion section)</p> <p>This paragraph indicates that the Applicant will “propose and justify additional running time at or above this additional rating, including continuous 10 minute periods.”</p> <p>However, EASA’s position mandates specific running times.</p> <p>Recommendation: reconcile the discussion with the requirements.</p>	
<p>EASA response: .Not Accepted. . EASA Position is not contradictory to this point of the Discussion section as it gives only an acceptable additional running time to CS-E 740 (c).</p>	

Committer:	FAA Engine and Propeller Directorate Standards Staff
Comment #5:	General Comment
<p>Special Condition item: Statement of Issue</p> <p>Comment: The SOI states that the SC is for a “twin engine application”. We believe that engine certification should not restrict the number of engine on the aircraft.</p> <p>Recommendation: instead of “twin engine application” use “multi engine application”</p>	
<p>EASA response: Accepted. Special Condition amended.</p>	

Committer:	FAA Engine and Propeller Directorate Standards Staff
Comment #6:	EASA Position
<p>Special Condition item: CS-E 20 Engine Configuration and Interfaces & CS-E 25 Instructions for Continued Airworthiness.</p> <p>Comment: In regard to the inspection and maintenance actions - the statements below seem inconsistent. It’s not clear whether an inspection and maintenance action is required following “every single usage”, or it is up to the applicant to determine “if dedicated inspections are to be performed”.</p> <p>(i) Page 2, SOI section, last paragraph:</p> <p><i>“Every single usage of the OEI rating will be followed by an adequate engine servicing</i></p>	

within a maximum cumulated usage of 10 minutes.”

(ii) Page 3, EASA's position CS-E 20, last paragraph:

“If dedicated inspections are to be performed following usage of the “OEI High Ambient Take-Off Temperature” rating in service, they will be defined in the ICA.”

(iii) Page 5, EASA's position, CS-E 740 Endurance Tests, last paragraph:

“Even though specific maintenance action can be expected following the use of the “OEI High Ambient Take-Off Temperature” rating, compliance with CS-E 740(h) will be demonstrated.”

Recommendation: If EASA determines that a post flight inspection is mandatory, add this requirement in the rating's definition, similarly with that for the 30-second and 2-minute OEI ratings. If not, keep the requirements in EASA's position for CS-E 20.

In both cases, revise related statements in the SOI and EASA's position to agree with the inspection and maintenance actions.

EASA response: Accepted.
EASA amended Special Condition.

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #7:	EASA Position
Special Condition item: CS-E 740 Endurance Tests	
Comment: In addition, the language in (iii) “can be expected” is ambiguous. (iii) Page 5, EASA's position, CS-E 740 Endurance Tests, last paragraph: <i>“Even though specific maintenance action can be expected following the use of the “OEI High Ambient Take-Off Temperature” rating, compliance with CS-E 740(h) will be demonstrated.”</i>	
EASA response: Accepted Wording is changed as follows: “Compliance with CS-E 740(h) will be demonstrated”.	

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #8:	EASA Position
Special Condition item: CS-E 20 Engine Configuration and Interfaces & CS-E 25 Instructions for Continued Airworthiness.	
Comment: (first dash bullet) This section appears to state that a total time limit must be specified for this rating. A similar statement is included under Statement of Issue (SOI). However it's not clear what that time limit must be or how to determine or demonstrate such a limit. Overall what is required or suggested here is not clear in intent or whether it's a definite requirement or an option. Suggest such a cumulative time limit be optional, and if the applicant chooses to have one, then an operating limit should be established along with proper ICA maintenance actions.	
EASA response: Noted. The wording of the revised Special Condition specifies that the cumulative usage is only 10 minutes and determines how to demonstrate such a limit. That is clarified by rewording the SOI and the appropriate EASA Position sections of CS-E 20 & CS-E 25 and CS-E 740.	

Committer:	FAA Engine and Propeller Directorate Standards Staff
Comment #9:	EASA Position
<p>Special Condition item: CS-E 40 Ratings</p> <p>Comment: We suggest the following definition for the rating:</p> <p>“Rated takeoff thrust means the approved engine thrust that is developed statically in standard atmosphere at sea level or specified altitude, within the engine operating limitations established under [<i>appropriate CS-E reference</i>] of this chapter, limited in use to periods of not over 10 minutes for takeoff operation after the failure or shutdown of one engine of a multiengine aircraft.”</p> <p>Rationale:</p> <p>(i) Suggested definition is consistent with existing definitions (e.g., those in CS or CFR) for takeoff and OEI ratings.</p> <p>(ii) The qualifier “in order to provide additional thrust at high ambient temperature (above Max Take-Off rating corner point)” is ambiguous because it does not qualify the “additional thrust”. The suggested definition addresses this aspect by stating “within the engine operating limitations”, which means the EGT for this OEI rating will allow obtaining the “additional thrust”</p>	
<p>EASA response: Partially Accepted. The definition of the rating has been clarified in the revised Special Condition.</p>	

Committer:	FAA Engine and Propeller Directorate Standards Staff
Comment #10:	EASA Position
<p>Special Condition item: CS-E 60 Provision for Instruments</p> <p>Comment: (1) (first dash) This section establishes an engine requirement that is dependent upon whether an aircraft level requirement exists, or will exist. We believe this requirement cannot be satisfied within engine certification.</p> <p>Recommendation:</p> <p>Suggest either require or not require pilot alerting, but do not tie it to future as yet undetermined airplane level situation.</p> <p>Rationale:</p> <p>An engine SC should establish what is required for an engine TC at the time the SC is published. What happens at the airplane level can change over time and this subject could be a moving target after the engine certification basis is established.</p>	
<p>EASA response: Accepted. Rewording of EASA position CS-E 60 Provision for Instrument within SC.</p>	

Committer:	FAA Engine and Propeller Directorate Standards Staff
Comment #11:	EASA Position
<p>Special Condition item: CS-E 60 Provision for Instruments</p>	

Comment: (2) We believe that specific requirements for means to alert the pilot and monitor the usage of this rating are warranted if the rating is determined to be damaging to the extent that specific mandatory inspection and maintenance actions are prescribed in relation to the use of this rating. For example, the usage of this rating would require inspection and maintenance action at the end of the flight.

Recommendation:

(i) If the SC will require mandatory inspection and maintenance action at the end of the flight or at intervals specific to the use of this rating, no change to EASA's position for CS-E 60.

(ii) Otherwise, remove these requirements.

Rationale:

This recommendation is based on the requirements for existing ratings. For examples, 30-second and 2-minute OEI ratings are considered highly damaging, require post flight inspections and maintenance actions, and require the means to alert the pilot and monitor their usage. However, no requirements exist for means to alert the pilot and monitor the usage of other OEI ratings.

EASA response: Accepted.

Rewording of EASA position CS-E 60 Provision for Instrument within SC.

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #12:	EASA Position
<p>Special Condition item: CS-E 515 Engine Critical Parts</p> <p>Comment: The SC is specific about considering this new rating under E 515 (Critical Parts). However, other engine regulations may be affected by this new rating. For example, the overspeed rule would be affected because it accounts for the maximum operating temperature.</p> <p>Recommendation: the SC should include a more global requirement to consider the new rating for all CS E sections as/if applicable, that way the onus is on the applicant to propose proper compliance and nothing should get lost. Recommend rolling this specific requirement into the global one</p> <p>Rationale: other engine certification regulations are affected by this new rating. This approach is also consistent with other SCs issued by the FAA.</p> <p>EASA response: Accepted. The SC is changed to include consideration to the new rating for all CS-E paragraphs as follows: "Any further CS-E paragraphs (e.g. CS-E 830 and CS-E 920) have to be considered by the applicant for the new rating as/if applicable."</p>	

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #13:	EASA Position
<p>Special Condition item: CS-E 740 Endurance Tests</p> <p>Comment: (1) We believe that the test time of "20 minutes consisting of 2 periods of 10 minutes" at this rating, is not sufficient.</p> <p>Recommendation:</p>	

Apply one period of 10 minutes at the subject rating during each of the 25 endurance cycles, for a total time of 250 minutes or 4 hours and 10 minutes; the 10 minutes period must be run between the maximum continuous power or less, and the subject OEI rating.

Rationale:

Recommended test time is analogous to something between the 2.5-minute and 30-minute OEI for shaft engines. In 33.87 the 2.5m OEI gets 3 hours test within the 150 hours test time; and the 30m OEI gets 12.5 hours test time. Therefore, the test time for this rating would fall between 3 and 12.5 hours within the existing 150 hours test time. In addition, the continuous OEI rating and 30-minute OEI rating add a single test period during each of the 25 endurance cycles. The 2.5-minute OEI adds 2 periods of 2.5 minutes each endurance cycle, and 10 minutes during a single endurance cycle. We believe the subject rating differ from the 2.5 minute OEI in regard to the intended use and for this reason, adding a single test period of 10 minutes during each endurance cycle is justified. The difference is that the 2.5 minute OEI is intended to be used both during takeoff and en-route, while the subject rating will be used only during takeoff.

EASA response: Not Accepted.

The proposed rating can not be compared to a 2.5-minute and 30-minute OEI rating for Helicopter engines because it will be submitted to inspection and servicing operations as per CS-E 25b(2) after cumulated 10 minutes usage. This proposed rating is analogous to the 30 Second and 2 Minutes OEI Power ratings, while the subject rating will be used only during Take-off.

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #14:	EASA Position
Special Condition item: CS-E 740 Endurance Tests	
Comment: (2) EASA is offering test time credit for test at other ratings (OEI and perhaps other ratings; the SC is not clear). Since Silvercrest does not have other OEI ratings, the SC should not contain this requirement. Also, FAA position is that such a rating needs a separate endurance test element, similar to most other ratings. We do not agree to credit baseline testing at takeoff or maximum continuous power or other potential ratings. The 10 minute OEI test element needs to stand alone as for the other similar OEI requirements.	
EASA response: Accepted. EASA deleted the second bullet of the initial Special Condition.	

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #15:	EASA Position
Special Condition item: CS-E 740 Endurance Tests	
Comment: (3) (second dash bullet) the requirement states: “Even though specific maintenance action can be expected following the use of the “OEI High Ambient Take-Off Temperature” rating, compliance with CS-E 740(h) will be demonstrated.”	
(i) Comment#1: The SC does not have requirements for specific maintenance action following the use of the rating.	
Recommendation: same as 2(a) above.	

EASA response: Accepted.
EASA deleted the second dash bullet of the initial Special Condition. Compliance with CS-E 740(h) must be demonstrated.

Commenter:	FAA Engine and Propeller Directorate Standards Staff
Comment #16:	EASA Position
<p>Special Condition item: CS-E 740 Endurance Tests</p> <p>Comment: (3) (second dash bullet) the requirement states:</p> <p>“Even though specific maintenance action can be expected following the use of the “OEI High Ambient Take-Off Temperature” rating, compliance with CS-E 740(h) will be demonstrated.”</p> <p>(ii) Comment#2: This statement seems to imply that the “specific maintenance action” and the compliance with CS-E 740(h) may be mutually exclusive.</p> <p>We believe that requirements of CS-E 740(h) are equivalent with those of FAA 33.93 Teardown inspection. The findings during the teardown inspection are usually applied toward defining the necessary inspections and maintenance actions. Therefore, compliance with CS-E 740(h) (and § 33.93) is needed to develop appropriate inspections and maintenance actions and should not be interpreted as a double showing of compliance.</p> <p>Recommendation: remove this statement</p>	
<p>EASA response: Accepted. EASA deleted the second dash bullet of the initial Special Condition. Compliance with CS-E 740(h) must be demonstrated.</p>	

Commenter:	CAA UK Strategy and Policy
Comment #17:	No comments
<p>Special Condition item: Proposed Special Condition</p> <p>Comment: Please note that there are no comments from the UK CAA on the above referenced document.</p>	
<p>EASA response: Accepted. No comments received.</p>	