Comment				Comment summary	Suggested resolution	Comment is an observation or is a suggestion	Comment is substantive or is an objection	EASA comment disposition	EASA response
NR	Author	Section, table, figure	Page						
1	*Turbomeca*	§2, §3.1	6	In its policy PS-ANE-33.89-1, only applicable to Turbofan, Turbojet and Turboprop engines, the FAA mentions why this policy was created (cf §7 Conclusion "We base this conclusion on the number of all-engines power loss events, the difficulty that flight crews experienced with in-flight starting of engines, and the new knowledge of engine rotor lock and rotor drag.") The FAA therefore decided in 2013, based on the return of experience, and on the knowledge of modern engine technologies, that it was not necessary to require such an assessment on turboshaft engines. Furthermore, Turbomeca does not know which modern turboshaft engines technologies and characteristics may reduce the in-flight engine starting envelope and increase the time required to restart the engine. To our knowledge, the problems mentioned in §2 are not applicable to turboshaft engines (windmilling restart, increased core-bypass ratios of newer engines, increased size, mass, and number of engine gearbox driven accessories). The NSTB recommendation mentioned in §2 is also only applicable to airplanes. What are the elements which drive the EASA to consider a possible applicability to turboshaft engines, contrary to FAA current position?	Please remove in §3.1 the possible applicability of this certification memo to rotorcraft engines in order to be consistent with FAA approach.	No	Yes	Not accepted	The EASA Policy paragraph in the proposed CM starts with the following words: "Though this policy is written for Turbofan, Turbojet and Turboprop engines, it should be considered for turboshaft projects to determine if similar concerns may exist for each particular turboshaft design. In the absence of guidance specific to turboshaft engines, or to rotorcraft, the objectives of a turboshaft engine demonstration of compliance with CS-E 910 will need to be agreed with EASA." EASA cannot foresee all future turboshaft engine designs which may be proposed by applicants, for which the past service experience may no more be relevant. Some of the evolutions seen on turbofans (tighter running clearances, higher operating temperatures, higher loads on the accessory gearbox) may also happen on turboshaft because higher efficiency is a goal, and always more electrical power is required by the aircraft. In the absence of AMC E 910, this CM is considered a valid reference document for Project Certification Managers. EASA would gladly consider any AMC E 910 guidance adapted to turboshaft that industry could propose for incorporation in a future issue of the CM.
2	*Turbomeca*	§3.1	7	For the point "1) Quick engine shutdown and relight", concerning the "unnecessary delay in returning the engine to the previous power setting", neither criteria nor example are provided. In addition, there is not equivalent requirement or guidance in FAA policy PS-ANE-33.89-1	For the point "1) Quick engine shutdown and relight", concerning the "unnecessary delay in returning the engine to the previous power setting", please give criteria or examples	No	Yes	Accepted	The following is added in the CM (for consistency with CS-E 50, the words "control logic" will be replaced by "control system"): Examples: An engine control system which relights the engine without requiring additional pilot actions would be better than a system requiring additional/multiple pilot actions. An engine control system which initiates the engine relight sequence immediately upon pilot command would be better than a system waiting for the engine to roll-back below a low speed threshold, or to reach a low temperature threshold, or to meet other conditions in addition to the pilot command.

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3	*Turbomeca*	§3.1-§3.2	7-8	The text of §3.2 says that that the certification memo is applicable to a change to an engine Type Certificate when this change affects compliance with CS-E 910. Therefore, if the change affects compliance with CS-E 910, but does not directly affect the engine or installation characteristics that may influence rotor lock or rotor drag, an assessment shall be done anyway. This assessment would normally include some testing at altitude test bench facilities. Turbomeca considers that the required assessment, for changes to engine Type Certificate, should be restricted to major engine design changes, which directly affect the engine or installation characteristics that may influence rotor lock or rotor drag: this is what is required in FAA policy PS-ANE-33.89-1 §4 (c. If such a restriction is not implemented, this certification memo would not keep the spirit of Part 21.A.101 and its guidance material, because it would necessitate a complete re-testing, and even a possible redesign, only for a major change without direct impact on the new point to address, and without any airworthiness code change.	Please restrict in §3.1 or §3.2 the required assessment, for changes to engine Type Certificate, to major engine design changes which directly affect the engine or installation characteristics that may influence rotor lock or rotor drag, like in FAA policy PS-ANE-33.89-1 §4 (c., or that directly affect the delay in returning the engine to the previous power setting, after engine shutdown.	No	Yes	Not accepted	If a change to the engine type certificate necessitates a new demonstration of compliance with CS-E 910, then the applicant should take into consideration the guidance for compliance demonstration provided in this CM. EASA Certification Memoranda clarify the European Aviation Safety Agency's general course of action on specific certification items. They are intended to provide guidance on a particular subject and, as non-binding material, may provide complementary information and guidance for compliance demonstration with current standards
4	*GAMA*			<u>**General comments**</u> GAMA does not agree with the scope of the guidance EASA has proposed (reference 1) on the subjects of engine relighting in flight and rotor-lock. WE submit that the EASA document should provide specific guidance for Part 29 rotorcraft in the manner that guidance is provided for Part 25 aircraft. The EASA guidance includes the statement: *"In the absence of guidance specific to turboshaft engines, or to rotorcraft, the objectives of a turboshaft engine demonstration of compliance with CS-E 910 will need to be agreed with EASA".* This statement only leaves the Special Condition or Issue Paper processes available to Part 29 rotorcraft applicants, with the associated unknowns of not having guidance material.				Noted	The proposed CM is addressing CS-E certification, not aircraft certification. EASA would gladly consider any AMC E 910 guidance adapted to turboshaft that industry could propose for incorporation in a future issue of the CM.

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5	*GAMA*			**Specific comments** GAMA also submits that the distinct differences in rotorcraft operations and configuration result in the ability to show analytically that a rotorcraft is compliant with requirements for engine relighting in flight as follows: - The flight test certification policy associated with relighting in flight should specifically allow compliance by analysis for Part 29 aircraft. This submission is supported by rotorcraft differences in engines, engine installation and flight envelope that are significant when compared to Part 25 aircraft. - Further, the lack of large fan stages and the small diameter compressors of Part 29 engines are not as prone to windmill; engines frequently have reduced inlet recovery due to location and/or filter mechanisms, and the rotorcraft fly at relatively slow airspeed. For these reasons a wind-milling start is not an option for rotorcraft. Rotorcraft also fly at lower altitudes and warmer temperatures with smaller engine diameters, and do not have many issues with rotor/case differential cooling and rotor-lock. This is not to say that wind-milling and rotor lock can't occur, but to make the case that it can be shown analytically if they will or will not occur. - Also, Part 29 applicants should be permitted to show analytically that rotorcraft engines and engine installations will not have in flight relighting difficulties or rotor lock that are exhibited by Part 25 engine systems.				Noted	The proposed CM is addressing CS-E certification, not aircraft certification. The EASA Policy paragraph contains the following: "For a new engine type certification, engine altitude testing or engine flight testing are the commonly accepted means of compliance. Nevertheless, as permitted by CS-E 910, other appropriate tests or evidence could be proposed by the applicant." For a particular engine project, an analysis can be an acceptable appropriate evidence.
6	*SNECMA*	§ 2.4.a.1	6/7	Following an inadvertently engine shut down, the pilot must initiates a restart command in less than 5 seconds. The engine must return to the previous power setting as soon as possible, but the delay is depending of the altitude and of the speed where the restart is commended. Regarding the unnecessary additional delay due to engine design (e.g. logic control), this delay should be defined (1 second is proposed).	1 Quick engine shut-down and relight ... The applicant should justify that the engine design, and in particular the engine control logic, will not introduce an unnecessary additional delay in the engine returning to the previous power setting greater than 1 second.	Suggestion	Suggestion	Not accepted	Because of the large number of various engine control system designs, EASA do not believe that it is possible to define a single delay value. It is accepted that engineering judgment is needed to address this part of the CM, as illustrated by the examples which will be introduced into the CM in response to question Nr 2 above.