


EASA	COMMENT RESPONSE DOCUMENT
	Proposed Special Conditions on Loss of Oil from Gearboxes Utilising a Pressurised Lubrication System Applicable to AgustaWestland AW 189 Issue 1

Commentor: **UK CAA]**

Please note that there are no comments from the UK CAA regarding Proposed Special Conditions on Loss of Oil from Gearboxes Utilising a Pressurised Lubrication System - Applicable to AW 189

EASA response: **Noted**

Commentor: **A Commenter**

Comment # 1 –

The rule CS 29.927(c) (1) Category A requires a rotorcraft to be able to continue safe operation at least 30 minutes after perception by the flight crew of the lubrication system failure or loss of lubricant.

The proposed Special Condition wording as-is excludes the “non-pressurised” lubrication system with no rational. The “non-pressurized” lubrication system is mainly used in the tail rotor drive system and usually not considered as part of the analysis. Nonetheless for any rotorcraft, the tail rotor drive system also is an essential system for the continued safe flight or landing. For that reason the “Lubrication system failure analysis” must also be applied to tail rotor driver system.

The title of SC 28.917 Design (d) also reads “Lubrication system failure analysis” and thus it shall be applied to any lubrication system.

Therefore it is proposed deleting the word “pressurized” from the proposed Special Conditions SC 29.917 Design (d) Lubrication system failure analysis.

EASA response:

Comment noted. As a reminder ,CS 29.927 (c)(1) states :“Unless such failures are extremely remote, it must be shown by test that any failure which results in loss of lubricant in *any normal use lubrication system will not prevent continued safe operation*, although not necessarily without damage, at a

torque and rotational speed prescribed by the applicant for continued flight, *for at least 30 minutes after perception* by the flight crew of the lubrication system failure or loss of lubricant.”

It has generally been interpreted over the last 25 years that “*will not prevent continued safe operation*”.....“*for at least 30 minutes*” relates to a capability to pass a test rather than a design performance capability for the helicopter. However, it is clear that the rule by itself is quite unclear. For this reason we have relied on the interpretation of the rule provided in the associated AC material which has been written in a way which limits applicability to pressurized lubrication systems.

EASA share the same concern as stated in the comment, i.e that the hazard severity of loss of oil from non-pressurized gearboxes is also catastrophic and is a risk which needs to be controlled. The way this has typically been addressed for European Part 29 helicopters is to perform testing to demonstrate that the TGB / IGB should be capable of continuing operation, after total loss of oil, for a duration long enough to ensure that the helicopter will have landed prior to failure of the gearbox. In this case it is then possible to declare the failure mode as Major in the FHA. Maybe this approach is something that should be considered for future rulemaking activity but has not been considered necessary to define as a Special Condition for the AW189 project.