

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
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1	LBA	3.1	6	Use of the words “NVG compatible” and “NVIS-compliant”. NVIS-compliant is not defined in Paragraph 1.4 Definitions.		YES	NO	Agreed	“NVIS compliant” is not defined in paragraph 1.4. Nevertheless, the wording in para 3.1 and 3.1.1 has been modified into “NVIS certified”
2	LBA	3.1.1	6	“the changes to an aircraft from non-NVIS to NVIS-compliant are considered to be major changes.” We do not understand this statement because this change does not affect the “operational characteristics of the aircraft”. The statement “NVIS-compliant” just confirms that all light sources are compliant and should not have adverse effect when NVG are used. This statement gives no right to use NVG! It is just a description of the installed equipment and lighting. No additional kinds of operation are combined with the phrase “NVIS-compliant”. The second step from NVIS-compliant to NVIS-approved is the major change with the change in operational characteristics of the aircraft (see also 3.1.2). Combining both steps is for sure a major change.	We would highly appreciate if you could explain why the first step “NVIS-compliant” is considered to be major change especially because you highlight in 3.1.2 that there could be no real “advantage” if the aircraft is NVIS-compliant prior the NVIS-approval.	NO	YES	Partially Agreed	NVIS compliant is meant here as NVIS-certified. Wording has been modified as follows: “In this context, changes to an aircraft from non-NVIS to NVIS-compliant certified are considered to be major changes.”
3	LBA	3.1.3	7	The expression “point” seems to be improper.	We recommend to use “paragraph”.	YES	NO	Not Agreed	For specific requirements in Part 21, EASA uses word “point”. See Part 21 as well.
4	LBA	3.1.3	7	first bullet: This is not a Part-21 criterion for change classification	Delete the first bullet	NO	YES	Not agreed	The list has always been in the CM since the first issue. Its objective has never been to decline the criteria for classification in accordance with Part 21. Rather, it was intended to describe what are the factors that could affect the way a DO defines the criteria for classification of the design changes on NVIS. The experience gathered in previous certification projects by the DO is certainly one of these factors.
5	LBA	3.1.3	7	first sentence after first set of bullets: DO Handbook reference should be softer “it is recommended to ...” because there are general criterions in Part-21 which are formally sufficient	Change “the DO Handbook should contain” into “it is recommended that DO Handbook contain	YES	NO	Not Agreed	As also explained in the first part of the paragraph 3.1.3, the strict Part 21 application may not be sufficient for the classification of the design changes on NVIS approved helicopters, leading in certain cases to wrong classifications. Therefore, there is a need to implement within the DO handbook a list of classification criteria, agreed with EASA, that helps the applicant in this respect. The rest of the paragraph gives appropriate guidelines on how to build the classification criteria. In any case, the CM, per its own status, is not intended to be a regulation. Approved DOs could decide to agree with the Agency and to implement different approaches.

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6	LBA	3.1.3	8	<p>major criteria, next-to-last: NVG “equal to or better than”.</p> <p>Is it clear to the community what a “better NVG” is?</p> <p>Which physical values needs to be changed to determine which NVG is better?</p> <p>Do you refer to a comparison between green and white phosphor (see 3.8.2)?</p>		NO	YES	Partially Agreed	<p>The sentence does not simply refer to a “generic” better NVG. The word “better” specifically refers to the optical and mechanical characteristics. RTCA DO-275 and related ETSO C-164 define the minimum performance specification for the NVGs. The optical and mechanical characteristics contained in this document are hereby referred. In addition, FOM is a generic performance indicator for the optical characteristics of the goggles. The sentence has been adjusted as follows to specify the reference to the DO-275 performance:</p> <p>“The addition to a specific NVIS approval of NVG models, whose optical or mechanical performance (with regards to the performance standards laid down in DO-275 and ETSO C-164) are not equal to or better than the ones already certified with that NVIS approval.”</p> <p>In regards to the last question, the point is also linked to paragraph 3.8.2. In fact, the change of a NVG model from green to white phosphor, by only changing the phosphor screen of the goggles without any degradation of the optical or mechanical characteristics, can be classified as a minor change.</p>
7	LBA	3.1.3	8	<p>This CM gives guidelines for the certification of NVIS and/or changes to NVIS approved rotorcraft. We doubt that any CAMO reads this CM and is therefore aware of this information.</p>	<p>We propose that the installation instructions and the maintenance instructions should give good advise/clear instructions to the CAMO and/or maintenance organisation. This is in the responsibility of the DO/ADO which applies for NVIS-approval.</p>	YES	NO	Agreed	<p>The last sentence of the paragraph already addresses the suggestion. Indeed, the CM is not addressing CAMOs or maintenance organization. The guidelines are provided for approved DO or Organisations using AP DOA in order to provide in their ICAs clear instructions to the CAMO and maintenance organization on how the configuration control of the aircraft has to be conducted at their level. In any case, the sentence has been modified to better clarify as follows:</p> <p>“On the other hand, operators and their CAMOs, that hold the complete information about each aircraft configuration, should be provided with clear installation and maintenance instructions that could allow them to properly carefully verify that the installation of any design change does not affect the NVIS approval.”</p>
8	LBA	3.2.1	8	<p>Are the colleagues of the DO Department aware of this CM?</p>		NO	NO	Noted	<p>All CMs, since their initial draft as well as any revision are always coordinated within all the affected departments and directorates in EASA before publication for public consultation. The EASA department responsible for the approval of DOs has been highly involved in this CM since Issue 1. In addition, the entire paragraph 3.2 has been included in the CM since the issue 2 and extensive coordination with the DOA Department was conducted.</p>

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9	LBA	3.2.2	9	number 2b): Where is defined what an “extensive change” is?	We propose the wording “Exchange of many components affecting the cockpit lighting.”	YES	NO	Not agreed	<p>The paragraph is intended to warn applicants using APDOAs that their application may be refused since the scope of their design change may require a new NVIS STC to be issued. We believe the word extensive is sufficient for the meaning of the sentence. Excessive detailing could be misleading without adding value to the sentence. The suggestion is also not agreed for the following reasons:</p> <ol style="list-style-type: none"> 1. It is not only a matter of quantity of the components that are exchanged but also quality. The simple exchange of all the cockpit instruments but with same technology, Fit-Form and Function and with the same lighting characteristics (i.e. simple P/N change due to obsolescence of the old ones) might not trigger the need for a new NVIS approval. 2. If the suggested wording was used, the word “many” could be challenged in the same way as the word “extensive”. It would be challenging to define how many components would need to be changed in order to trigger the need for a new NVIS approval.
10	LBA	3.2.2	9	Paragraph under number 3): You require an assessment prior to the application of a minor change by an operator, CAMO, “any legal person”. Please, can you give a reference within Part 21 that an applicant of a minor change needs to send such “compliance documents”?		NO	YES	Not Agreed	Part 21.A.103 reads: “A minor change to a type-certificate shall only be approved in accordance with point 21.A.95 if it is shown that the changed product meets the applicable certification specifications, as specified in point 21.A.101.” This means that showing of compliance is not derogated for minor changes. The AMC MG 16 point e.(9) in Book 2 of the CS-27 and CS-29 introduces changes that can be classified as minor. The classification should take into account the effects on cockpit/cabin lighting characteristics and the NVIS. In order to demonstrate that the impact on NVIS characteristics is negligible (and therefore that the classification of the design change as minor is correct), and in adherence to the above mentioned Part 21.A.103, this CM specifies that a NVIS assessment should be performed. Any legal person applying for a minor change to a NVIS will be asked to submit the above mentioned NVIS impact assessment together with their certification programme and compliance documentation.
11	LBA	3.7	14	OSD is not a separate application until beginning of this year. So, the wording of this section could be misleading. Furthermore, minor OSD changes can be approved by DO/ADO holding OSD privileges.		YES	NO	Agreed	<p>The paragraph has been changed, in order to take into account that OSD is no longer a specific application.</p> <p>“In such a case, in order to satisfy the applicable EU operational requirements as contained in Commission Regulation (EU) 965/2012, applicants should also apply for related OSD Change Approval at the same time of the Minor/Major Change or STC application consider the OSD constituents in the frame of their NVIS certification project.</p>
12	LBA	3.8.1	14	change 7 of FAA AC27/28 is dated 2016. The “recent” change is change 8 dated 2018.		YES	NO	Not Agreed	Change 8 of AC 27-1B and AC 29-2C is not yet considered to be AMC in CS-27 and CS-29 Book 2 (see AMC General). Latest applicable AC change in CS-27 and CS-29 Book 2 is Change 7, unless differently proposed by the applicant and agreed with the Agency in the frame of a specific project.

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13	LBA	Annexes	-	You also propose the Annexes. Are there any differences to the “old/current” versions?		NO	NO	Noted	No. There are no differences from the old versions of the annexes.
14	Manfred Bleyer	Table of Content	2	Paragraph 1.4 is missing		YES	NO	Agreed	Table of contents has been amended accordingly
15	Manfred Bleyer	1.4	6	Definition of Night Vision Imaging System	I would add here also training and continued airworthiness. See SPA.NVIS.140 GM 1	YES	NO	Agreed	The Definitions are as much as possible equal to those provided in the MG-16 and therefore they are mostly focused on certification aspects. Nevertheless, it is agreed that adding references to training and continued airworthiness are beneficial to understand the complexity of the NVIS. The following sentence has been added to the definition: “for specific operational aspects of the NVIS, also refer to the definition provided in the SPA.NVIS.140 GM1.”
16	Manfred Bleyer	3.1.3	7	Last bullet in the first list. What is meant by NVIS approval?	Please clarify the meaning of “NVIS approval”	YES	NO	Agreed	The list defines the aspects taken in consideration by the DOs when defining their own criteria for NVIS design changes classification. One of the factors affecting this criteria was the scope and operating limitations of the existing NVIS approval of the helicopter. Wording has been amended as follows: “scope and operating limitations of the helicopter NVIS approval”.
17	Manfred Bleyer	3.2.3.1	10	Knowing that is not the subject of the CM, but I would highly recommend to update the Part 145 and Part CAMO to address required training for CAMO and P145 personnel. Additionally NVIS capability should be included in the terms of approval for Part 145		YES	NO	Noted	The comment is agreed and transferred to the EASA departments responsible for the continuing airworthiness regulation.
18	Manfred Bleyer	3.2.3.2	10	These minimum crew requirements are way too stringent for flight test personnel engaged in certification activities. These are CAT requirements. We do not transport passengers for certification flight testing. Why do we need to comply with CAT requirements for NVIS testing?		NO	YES	Agreed	The comment is agreed. The paragraph was intended to ensure that all the flight test organisations foresee in their FTOM appropriate requirements for recurrence and proficiency with NVIS flight for crew involved in NVIS activities. Although the specific requirement may be stringent, it is recognized that SPA.NVIS.130 can be used as a reference for the FTOM. Therefore the sentence has been changed as follows: “In addition to the above-mentioned requirements, the Company FTOM should establish the minimum NVIS operational and/or flight test experience in development and certification programmes. However, these minimum requirements should not be less than the crew requirements for NVIS operations laid down in the SPA.NVIS.130 and related AMC and GM. When establishing these minimum requirements the SPA.NVIS.130 and related AMC and GM may be taken as a reference.”
19	Airbus Helicopters	1.4	5	Definition of “NVG-compatible”: Aircraft internal and external lighting that is NVG compatible and does not adversely affect the NVG image” NVG compatible according to which requirements? NVIS radiance values in DO-275? For exterior lights there are no NVIS radiance requirements in DO-275. Which ones to take?	“NVG-compatible”: Aircraft internal and external lighting that is NVG compatible and does not adversely affect the NVG image.”	NO	YES	Agreed	Text changed as per MG-16 definition: “Aircraft internal and external lighting that is NVG-compatible and when it does not adversely affect the NVG image.”

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20	Airbus Helicopters	3.1.3	8	<p>"The addition of NVG models, whose optical or mechanical characteristics are not equal to or better than the ones already certified"</p> <p>Which optical characteristics? Which mechanical characteristics? What is "better" w.r.t. these characteristics?</p>	List of measurable parameters should be provided in the CM or by reference to appropriate documentation.	NO	YES	Partially Agreed	<p>See comment n. 6. Sentence has been adjusted as follows to specify the reference to the DO-275 performance:</p> <p>"The addition to a specific NVIS approval of NVG models, whose optical or mechanical performance (with regards to the performance standards laid down in DO-275 and ETSO C-164) are not equal to or better than the ones already certified with that NVIS approval."</p>
21	Airbus Helicopters	3.1.3	8	<p>"The first introduction of a white phosphor NVG, ..., and that this guarantees equal or better performance..."</p> <p>What is meant by "performance"?</p>	More detailed definition of "performance"	YES	NO	Partially agreed	<p>See comment 6 and 20. Sentence has been adjusted as follows to specify the reference to the DO-275 performance:</p> <p>"...and that this guarantees equal or better performance with regard to the DO-275 performance standards"</p>
22	Airbus Helicopters	3.3.2	11	The prerequisite for the acceptance by EASA of the ground and flight test programme is not in line with Part-21 LOI principles. The involvement of EASA on the review of the test programmes is dependent upon the novelty, complexity and severity.	Revise the paragraph wording to indicate "accepted by EASA or under DOA in accordance with LOI, as applicable"	NO	YES	Agreed	<p>Wording changed as per the suggestion.</p> <p>"Ground and Flight Test Programme/Plan should be agreed and accepted by EASA or by DOA in accordance with the LOI, as applicable, before company flight test takes place;</p>
23	Airbus Helicopters	3.3.3	11	<p>"As per the provisions of MG 16,... in accordance with ETSP C164 or equivalent"</p> <p>What is considered as equivalent? TSO?</p>	List of what is considered as equivalent or deletion of "or equivalent"	YES	NO	Agreed	"or equivalent" is deleted.
24	Airbus Helicopters	3.3.3	11	<p>"If the NVG are not granted an ETSO authorisation, the requirements of DO-275 Section 2, 5.2 and 5.5.</p> <p>Section 5.2 contains instructions applicable to the owner or operator. TC Holder cannot be hold for responsible of the compliance demonstration of these section of the DO-275.</p>	<p>EASA should clarify who is requested to provide the evidence requested in 3.3.3 and by which means the compliance will be recorded</p> <p>Refer to comment 7 below</p>	NO	YES	Agreed	<p>5.2 is deleted. The whole section 5 is considered generally applicable. The whole paragraph is changed as follows:</p> <p>"As per the provisions of MG 16, applicants for NVIS certification projects should provide evidence that the NVG to be used with the NVIS certified helicopter have been granted an authorisation in accordance with ETSO C-164 or equivalent. Alternatively, the NVG can be compliant with RTCA DO-275, which constitutes the minimum operating performance specification for the aforementioned ETSO. If the NVG are not granted an ETSO authorisation, evidence should be provided that the NVG before installation are compliant at least with requirements of DO-275 Section 2-5-2 and 5-5".</p>
25	Airbus Helicopters	3.3.3	11	<p>In all cases, the effectivehuman factor characteristics, inter-system interface and mechanical installation."</p> <p>What is meant with "inter-system? Which systems? What is meant with mechanical installation?</p>	More level of detail (e.g. interface between xx and yy) should be introduced in the CM for clarity	NO	YES	Not agreed	<p>"Inter-system interface" and "mechanical installation" are self-explanatory wording. The inter-system interface and mechanical installation are aspect of investigation of the NVG cockpit compatibility that may be needed to be taken in consideration, in case the NVG assembly has any interface with other systems, or needs any special installation feature.</p>

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26	Airbus Helicopters	3.4.3,3.5.1	12,13	<p>The NVG are non-installed equipment (NIE) as per the New basic regulation (EU) 2018/1139 definition and should be recognized as such.</p> <p>Although it is recognized that the framework for certification of the NIE is not yet in place, the EASA policy is unclear on the need to have an approval requested for the NVG. Paragraph 3.5.1 in particular indicates that EASA is not taking the FAA approach to require TSO approval on the NVG as it is judged not sufficient.</p> <p>However, NVG are not requested to be under the responsibility of the NVIS approval holder, except for the configuration control to ensure compatibility.</p> <p>Ensuring the NVG comply with the standards set in the DO-275 or equivalent can only be done through certification as anticipated by the EASA Basic Regulation. The operator is generally selecting the NVG for use in its helicopter and not the NVIS approval holder (in our case the manufacturer). It will be therefore logical that the pre-requisite for the use of certified NVG is set in the SPA.NVIS operational regulation on the operator, if considered as a must by the regulator. The appropriate specifications for the approval of the equipment could then be set into the associated AMC or GM material, as it is done for the EFB in SPA.EFB.100 as an example.</p>	<p>EASA should at least make reference to the new regulatory framework set up by the basic regulation and define the policy of the CM as interim policy pending the availability of the implementing rules.</p> <p>Requirements applicable to the operator should be published in the appropriate operational regulation (SPA.NVIS) and thus removed from the certification memo if not clearly indicated to be applicable to the operator.</p>	NO	YES	Not Agreed	<p>EASA Basic Regulation (EU) 2018/1139 art. 3 point (20) states: ‘non-installed equipment’ means any instrument, equipment, mechanism, apparatus, appurtenance, software or accessory carried on board of an aircraft by the aircraft operator, which is not a part, and which is used or intended to be used in operating or controlling an aircraft, supports the occupants' survivability, or which could impact the safe operation of the aircraft;</p> <p>NVIS means Night Vision Imaging “System” and is defined in para 1.4 as “A system that integrates all elements (including the NVG, windshield, and lighting system) required to operate an aircraft successfully and safely with the aid of NVGs”.</p> <p>NVGs therefore are part of this system and are considered part of the aircraft configuration certified for NVIS operation.</p> <p>Therefore, certification of the NVG as part of the helicopter NVIS configuration is a responsibility of the approval holder and cannot be delegated to the operator or to the NVG supplier.</p> <p>As per MG-16, compliance of the NVG to the DO-275 is the first essential step in order to ensure minimum performance of the equipment that would enable safe NVG operations.</p> <p>ETSO C-164 authorisation is simply a formal recognition of compliance to the DO-275 given to the NVG manufacturer. Of course, ETSOA is equivalent to direct demonstration of compliance to the DO-275. However, after compliance to the DO-275, integration of the NVG on the helicopter NVIS configuration must still be demonstrated.</p> <p>As explained in the CM, FAA considers that any NVG with a TSOA is acceptable to be used on any NVIS certified helicopter. However, this approach is not agreed since, as per any other equipment, a ETSO authorisation per se does not guarantee integration of the equipment on board the aircraft in compliance to the applicable certification basis.</p>
27	Airbus Helicopters	General		<p>The consequence of the carriage in the cockpit of non-installed equipment with light source should be addressed.</p>	<p>Provide guidance for the configuration management of non-installed equipment (e.g EFB) and any associated filters used on NVIS certified helicopter</p>	NO	YES	Not Agreed	<p>Indication for carry-on equipment is already in MG16 (page MG16-14) as part of the RFM instructions.</p>
28	Airbus Helicopters	3.5.1	12/13	<p>The certification memo interprets the SPA.NVIS.110.e to be applicable to the organisation responsible for the design of the RFM content. However, nothing in the SPA.NVIS.110 seems to be applicable to the NVIS approval holder. The paragraph e mentions a requirement that the operator as to fulfil and this cannot be transposed to the NVIS approval holder as such. The safety objective for having the same model, type and generation of NVG should be clarified and established at the appropriate level of the certification specification (e.g. CS27/29 level) to become applicable to the NVIS approval holder and therefore potentially have a repercussion et RFM content level.</p>	<p>It is proposed to delete the second paragraph of 3.5.1 and clarify the safety rationale behind the request of a hard RFM limitations on this topic.</p>	NO	YES	Not Agreed	<p>The intent of SPA.NVIS.110.e is to ensure that all the crewmembers use similar NVG to the maximum possible extent, in order to avoid excessive differences in the external view and the visual references between them. SPA.NVIS.110.e was issued when white phosphor NVG were not yet widely used. The use of white and green NVG within the same cockpit would cause excessive differences in pilots views, and therefore are not deemed safe. Beyond any operational motivation, this is considered as an airworthiness point. As such, it is EASAs interpretation that, until further amendment of the Air OPs regulation and related AMC/GM, this point is addressed by means of a RFM limitation for all NVIS approvals in the EU.</p>

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29	Airbus Helicopters	3.6	13	Please clarify the rationale why the light leak checks after a hard landing or after lightning strike are required in any case		YES	NO	Noted	Experience has shown that, after a hard landing, the structure surrounding light sources in the cockpit may be damaged, following which some maintenance/repair activity may be needed. Also, a lightning strike, may require the exchange or repair of part of the electrical system, including light emitting equipment.
30	Airbus Helicopters	3.8.1	14	Please clarify the rationale behind only the difference of screen colour leading to not be classified as a major change in case of white phosphor introduction		YES	NO	Noted	When exchanging the phosphor screen of the Image Intensifier Tube, from a green to a white one, the optical performance of the NVG is not degraded. Moreover, experience has shown that NVG models modified from green to white phosphor by means of simple change of the screen phosphor, introduces a significant improvement in the pilot's view, since the white-over-black image is better perceived than the green-over-black one.

* Please complete this column using the word "yes" or "no"

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