EASA	COMMENT RESPONSE DOCUMENT
	**EASA CRD of Proposed Special Condition for Lights for Free Manned Balloon Flights at Night Issue 1**

Commenter 1 : UK CAA

Comment # [1] – Special Condition –

Paragraph N°: Statement of Issue

Comment: It is noted that EASA has received an application for the 'airworthiness certification of a light installation'. Typically balloon lighting consists of a battery-powered device suspended beneath the balloon by a rope which is manually deployed after take-off. As such the lighting equipment is more or less portable and completely independent from the rest of the aircraft so would not normally be regarded as being installed in the aircraft or indeed a part of the aircraft.

Whilst it is necessary for the lighting equipment to meet a minimum specification it is questionable whether it is necessary for the equipment to be certified. It also raises the question about whether any balloon that is intended to be flown at night must have its lighting equipment presented for certification before it is permitted to fly at night. This would be a particularly onerous requirement for existing balloon operators.

EASA position:
1st paragraph of comment: not accepted
2nd paragraph of comment noted

EASA response (to both comments):
Parts and appliances as defined in the BR 216/2008 are items used or intended to be used in operating or controlling the aircraft. There is an operational need to carry lights and for that reason with this definition they are required to be certified. We however try to provide reasonable and pragmatic requirements taking into account the type of application.
ICAO rules related to balloon lights do not exist. The current national specifications for balloons lights are varying. In absence of a common standard throughout the EASA Member States this Special Condition became necessary to provide a common standard. It is intended to use it for the next amendment of the relevant CS 31 codes.
The Special Condition applies to the designs which are approved according to it. It is therefore not an onerous requirement for existing balloon operators.

Comment # [2] – Special Condition –

Paragraph N°: General

Comment: The UK supports the requirement for free manned balloons to be lit when conducting operations at night. The requirement should apply uniformly to all flights at night regardless of flight rules in use. If it is intended that a different specification will be applicable to night IFR or SVFR flights then these should be developed simultaneously otherwise there will be no Certification Specifications for balloon flights operating under IFR or SVFR.

Justification: The lighting of balloons at night is necessary in all circumstances regardless of the flight rules in use.

Proposed Text: Replace all instances of ‘night VFR’ or ‘VFR night’ with ‘night’.

EASA position:
accepted

EASA response:
All instances of ‘night VFR’ or ‘VFR night’ replaced with ‘night’

Comment # [3] – Special Condition –

Paragraph N°: General

Comment: The proposed Special Conditions appear to conflict with Part-SERA (SERA.3215) which require that both an anti-collision light and a position light be fitted. Given that Part-SERA is more advanced than the proposed CS we suggest that Part-SERA takes precedent.

Justification: Standardisation across European Regulations.

EASA position:
accepted

EASA response: – ICAO rules related to balloon lights do not exist.. SERA.3215(a)(3) will be amended by an AMC to address "position lights" such that there will be no conflict with the Special Condition.

Comment # [4] – Special Condition –

Paragraph N°: CS-31/HB/GB.65(b)

Comment: The requirement for aircraft flying at night to display lights is already contained in Part-SERA which is derived from ICAO Annex 2. It is therefore not necessary to repeat this requirement in the Certification Specifications.

Justification: Avoiding duplication of requirements.

Proposed Text: ~~For night VFR operation an~~ The Anti-Collision light system ~~is installed which must~~ comply~~ies~~ with the following:

EASA position:
accepted

EASA response: first sentence of (b) will be modified to read:
"(b) The Anti-Collision light system complies with the following:"

Comment # [5] – Special Condition –

Paragraph N°: CS 31HB / GB.65(b)(4) and AMC CS 31HB / GB.65(b)(3)

Comment: It is not ideal for distance measurements to be presented as literal conversions to metric from the imperial unit (e.g. 9.15m). Measurements should be rounded to the nearest whole or half.

Justification: Using odd numbers is more difficult to measure and more likely to cause confusion.

Proposed Text:
CS 31HB/GB.65 VFR night lighting
(4) The Anti-Collision light is at least visible from a distance of ~~3.7 km (2 NM)~~ *3.5km (1.9nm)* at night under clear atmospheric conditions (see AMC 31HB/GB.65(b)(4)).

AMC 31HB/GB.65(b)(3))
An Anti-Collision light suspended not more than 9~~.15~~ m (30 feet) below the basket is considered in the proximity of the balloon. Such a suspended Anti-Collision light system has means to:
(i) retract and store the lights.
(ii) ensure release of the cable in case of getting snagged.

EASA position:
partly accepted

EASA response:
The general approach concerning conversions is accepted, however, the individual figure still needs to be considered.
The "3.7 km (2 NM)" needs to be kept because it is taken from CS 23.1399(a)(1) and provides a simple practical criterion.
The "9.15 m (30 feet)" will be replaced by "9 m". Following a common rule for rounding off a value; this allows a value of 9 m ±0.5 m. Thus, unnecessary exact dimensions are avoided and the 30 ft length is implicitly still covered.

Comment # [6] – Special Condition –

Paragraph N°: CS 31HB / GB.65(b)(4)

Comment: We suggest that this requirement be expressed in terms of a unit of measured brightness e.g. 'Lumen' or 'Candela'. The existing UK requirement is 5 Candela which is thought to be visible at 3.7km range in clear conditions.

Justification: Balloon operators are unlikely to be able to determine with any level of certainty whether their lighting equipment is visible at 3.7km range. The proposed change should make it easier for balloon operators to ensure compliance without deviating from the proposed requirement.

Proposed Text:
The Anti-Collision light is *of* at least ~~visible from a distance of 3.7 km (2 NM) at night under clear atmospheric conditions~~ *5 candela* (see AMC 31HB/GB.65(b)(4)).

EASA position:
not accepted

EASA response:
The "3.7 km (2 NM)" requirement can be complied with by practical means in a simpler way than ever before. A measurement of brightness in e.g. 'Lumen' or 'Candela' would require complex technical equipment. The necessary effort might not justify the additional precision.
Balloon operators are not required to ensure compliance with this requirement because it's the task of the applicant seeking the approval for his design.

Comment # [7] – Special Condition –

Paragraph N°: CS 31HB / GB.65(b)(5)

Comment: Balloon lighting typically relies on batteries mounted internally within the light unit. It

should be permissible for the light unit to be momentarily drawn back in to the basket for the purpose of changing the batteries.

Justification: It is necessary to ensure that batteries can be changed in flight in order to prevent the lamp extinguishing. Ideally sufficient battery power should be provided for the duration of the flight but in the case of long duration flights or cold conditions when battery capacity is reduced the ability to change batteries needs to be catered for.

Proposed Text: AMC 31HB / GB.65(b)(5) The Anti-Collision light may be recovered to the basket in order to replace batteries during flight. The light must be redeployed as soon as possible and with minimum delay. Following the commencement of official daylight, the Anti-Collision light may be recovered to and retained in the basket.

EASA position:
noted

EASA response:
There are several design concepts for the light's energy supply, some without the need of changing batteries. This is therefore considered to be a design specific issue which is more effectively addressed by the Flight Manual (Supplement) as part of the design approval than in an AMC.
SERA.3215(e)(1) allows a short temporary dim or switch-off to avoid that the light adversely affects the satisfactory performance of crew duties e.g. while performing a battery exchange.

Comment # [8] – Special Condition –

Paragraph N°: AMC CS 31HB / GB.65(b)(3)

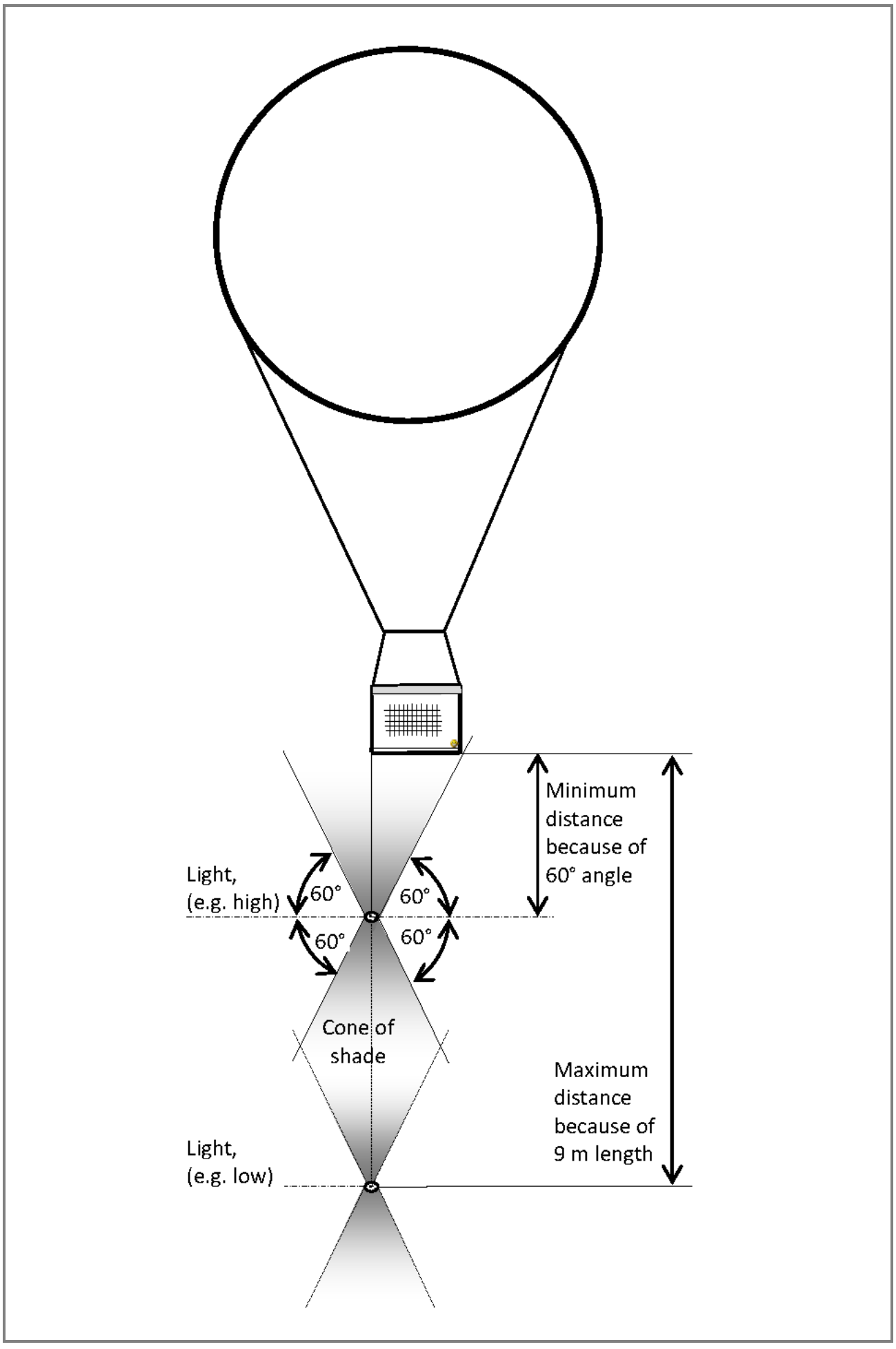
Comment: A maximum AND MINIMUM distance below the basket is required for the Anti-Collision light.

Justification: A minimum distance is required in order to separate the basket and light.

Proposed Text: The Anti-Collision light shall be suspended not less than 5 metres and not more than 9 metres below the basket, or if there is no basket, below the lowest part of the balloon.

EASA position:
noted

EASA response:
The Special Condition comprises the "±60° vertical coverage" which is assures visibility for ascending/descending traffic.
The minimum vertical distance results from the geometric arrangement of the light. This additional flexibility allows also for unconventional designs not necessarily suspended beneath the basket.
The drawing similar to the one below will be added to the AMC to clarify the minimum/maximum distance.


Minimum distance because of 60° angle
Light, (e.g. high)
60°
60°
60°
60°
Cone of shade
Maximum distance because of 9 m length
Light, (e.g. low)

Commenter 2 : Ballonbau Wörner GmbH

Comment # [9] – Special Condition –

Paragraph N°: Special Condition

Comment: We appreciate the clarification for night flight illumination. The justification and technical demands are clearly addressed and adequate to provide safe operation of manned free balloons during night flights.

Justification: -/-.

Proposed Text: -/-

EASA position: noted
EASA response: -/-

Commenter 3 : Mr Pierrick Duvoisin

Comment # [10] – Special Condition –

Paragraph N°: CS 31HB/GB.65(b)(1)

Comment: I just have a remark about the flashing frequency. I think not more than 80 flashes/per minute is nice, more is too much. There is no permanent light, right?

Justification: -/-.

Proposed Text: -/-

EASA position: not accepted

EASA response: The flash frequency is usually (by FAR 31 and ICAO) 40-100 flashes/min. High energy LEDs radiate heat which might not be cooled by the airstream (as for aeroplanes). Commercially of the shelf flash lights nearer to 140/min are less sensitive to cooling. Furthermore ICAO allows for overlapping flashes a frequency of up to 180/min. There is no permanent light because it does not support the estimation of the balloon's trajectory.

EASA Note:

Following the comments received, EASA has decided to modify the Special Condition for Lights for Free Manned Balloon Flights at Night and to re-issue it.

Most of the changes brought to the initial Issue 1have no technical or only minor impact, therefore a new consultation of Issue 2 has been judged not needed.

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