

**Subject: Avoiding Obstacles Lighted with Light-Emitting Diode Obstacle Lights whilst Operating with Night Vision Goggles**

#### Ref. Publications:

- Commission Regulation (EU) No [965/2012](#) dated 05 October 2012 on Air Operations (Air OPS Regulation), more specifically: Annex V – Part-SPA, subpart H: helicopter operations with night vision imaging systems (NVIS) and related AMCs and GMs.
- Federal Aviation Administration (FAA) [SAFO18010](#) dated 09 December 2018 on “Procedures for Avoiding Obstacles Lighted with Light-Emitting Diode (LED) Obstruction Lights While Utilizing Night Vision Goggles (NVG)”.
- [FAA SAFO09007](#) dated 03 June 2009 on “Night Vision Goggle (NVG) Advisory Pertaining to Certain Red Colour Light Emitting Diodes (LED)”.

#### Applicability:

Air operators and competent authorities.

#### Description:

Some red obstacle lights that are clearly visible to the naked eye are not visible to NVGs. These obstacle lights employ LED instead of traditional incandescent sources. The use of LED is becoming more common for almost all lighting applications because of their extensive life time and low energy consumption.

Aviation red light ranges from about 610 nm (nanometres) to 700 nm, and NVGs approved for civil aviation (having a Class B Minus Blue Filter) are only sensitive to energy ranging from 665 nm to about 930 nm. LED have a relatively narrow emission band (around 630 nm +/- 20 nm) and that band is below the range in which NVGs are sensitive and LED do not emit infrared energy like incandescent lights for obstacle red light.

In general terms, NVG users should be aware that LED obstacle lighting systems falling outside the combined visible and near-infrared spectrum of NVG (approximately 665 to 930 nm) will not be visible to their goggles. Crews that use NVGs should be extra cautious when flying near obstacle areas and to report any hazardous sites to their competent authority.

Guidance Material (GM) GM1 to SPA.NVIS.140 Information and documentation, paragraph 4.4.1.1.3 - Unaided scan, already explains that under certain conditions, an unaided scan can be as important as the others (NVG scan, instrument cross check scan). For example, it may be possible to detect distance and/or closure to another aircraft more easily using unaided vision, especially if the halo caused by the external lights is masking aircraft detail on the NVG image.

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This is information only. Recommendations are not mandatory.



The GM1 to SPA.NVIS.140 also states that “Additionally, there are other times when unaided information can be used in lieu of, or can augment, NVG and instrument information.” Some examples where unaided scan can enhance safety is where LED-lit obstacles can be encountered (e.g. during low altitude flying and when performing a reconnaissance of landing areas) or when unmanned aircraft systems (UAS) are flying at night with LED navigation lights.

In some countries, when LED lights are used to indicate an obstacle, they either include for example infrared (IR) emitters, or are used in conjunction with a stand-alone IR emitter in order to ensure that these obstacle lights are visible through NVGs.

At this time, the safety concern described in this SIB does not warrant the issuance of an operational directive under Regulation (EU) [965/2012](#), Annex II, ARO.GEN.135(c).

### Recommendation(s):

In order to mitigate any safety risk related to the use of LED obstacle lights, EASA recommends taking the following proactive measures:

- Air operators should ensure that their pilots are advised of the limitations associated with LED obstacle lighting and such information should be incorporated into the pilot NVIS training programmes.
- Air operators should incorporate procedures into their manuals and/or standard operating procedures (SOPs) that require periodic unaided scanning when operating at low altitudes and when performing a reconnaissance of landing areas. This may be accomplished by looking under or to the sides of NVGs, or by briefly placing NVGs in the stowed (flipped-up) position.
- Manuals/SOPs should include procedures and call-outs for LED-lit obstacles. For instance, crew members should make periodic unaided scans and “point out” the obstruction(s) to the pilot flying, e.g. “LED lit tower, two o’clock”.
- A landing should be aborted and/or a climb to a higher altitude should be initiated, if the location of an obstacle is not clear to the pilot.
- Air operators and pilots are encouraged to report encounters with obstacles equipped with LED lighting systems not visible by NVG, with pertinent information, to their competent authority.
- Competent authorities should take into account the above recommendations during their safety oversight activities of air operators.
- Competent authorities should take into account this SIB when obstacles are indicated by LED obstacle lights.

### Contact(s):

For further information contact the EASA Safety Information Section, Certification Directorate.

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