



U.S. Department
of Transportation

**Federal Aviation
Administration**

InFO

Information for Operators

InFO 11004
DATE: 2/15/11

Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info

An InFO contains valuable information for operators that should help them meet certain administrative, regulatory, or operational requirements with relatively low urgency or impact on safety.

Subject: Enhanced Flight Vision System (EFVS), Enhanced Vision Systems (EVS), and Night Vision Goggles (NVG) compatibility with Light-Emitting Diodes (LEDs) at airports and on obstacles

Purpose: This InFO advises operators that LED lights are significantly less visible than traditional incandescent lightbulbs when viewed through EFVS, EVS and NVG. Random installations of LED lights are occurring at airports and on obstacles worldwide.

Background: On January 4, 2007 congress passed the Energy Independence and Security Act (<http://energy.senate.gov/public/files/getdoc1.pdf>, Section 321) which mandates phasing out incandescent lightbulb use by 2012-2014 for energy conservation purposes.

Discussion: Some advanced vision systems, such as EFVS and EVS, rely on Forward Looking Infrared (FLIR), which is a type of thermal imaging used for vision enhancement. The ability of these devices to image LEDs is diminished due to light wave length and reduced heat signature when compared to traditional incandescent lights. As a result, LEDs are not sensed by EFVS and EVS.

NVGs primarily use light amplification for imagery. Certain LED lights fall outside the combined visible and near-infrared spectrum of NVG. Frequency spectrum issues relating to NVG and LED lights are outlined in SAFO 09007 (http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safos/all_safos/media/2009/SAFO09007.pdf). Due to the congressional mandate, incandescent lightbulbs are being replaced with LED lights at various airport locations throughout the National Airspace System. Presently, only approach lights have not been subject to the change-over. All other lighting on an airport or on obstacles could be LED or a combination of LED and incandescent lights. The Federal Aviation Administration (FAA) is working with industry, through SAE G-20 (Airport Lighting Committee), to arrive at a technology solution that would make LED's and EFVS interoperable.

Recommended Action: Operators utilizing advanced vision systems should be familiar with the contents of this InFO. They are urged to use caution when relying on advanced vision system (EFVS, EVS or NVG) imagery. Dramatic image changes may occur when maneuvering from a surface marked with incandescent lights to a surface marked with LED lights, additionally, LED obstacle beacons may be more difficult to identify.

Contact: Questions or comments concerning this InFO can be directed to Terry Stubblefield or John Blair, Flight Technologies and Procedures Division, Flight Operations Branch, AFS-410 at (202) 385-4586.