Office of Airport Safety and Standards Update

To: IESALC Conference

October 22, 2019

By: Robert Bassey

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Agenda

- Overview of FAA, Office of Airports Safety and Standards
- AC 150/5345-53D Addendum
- Engineering Brief, EB 67D, “Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures”
- Advisory Circular Updates

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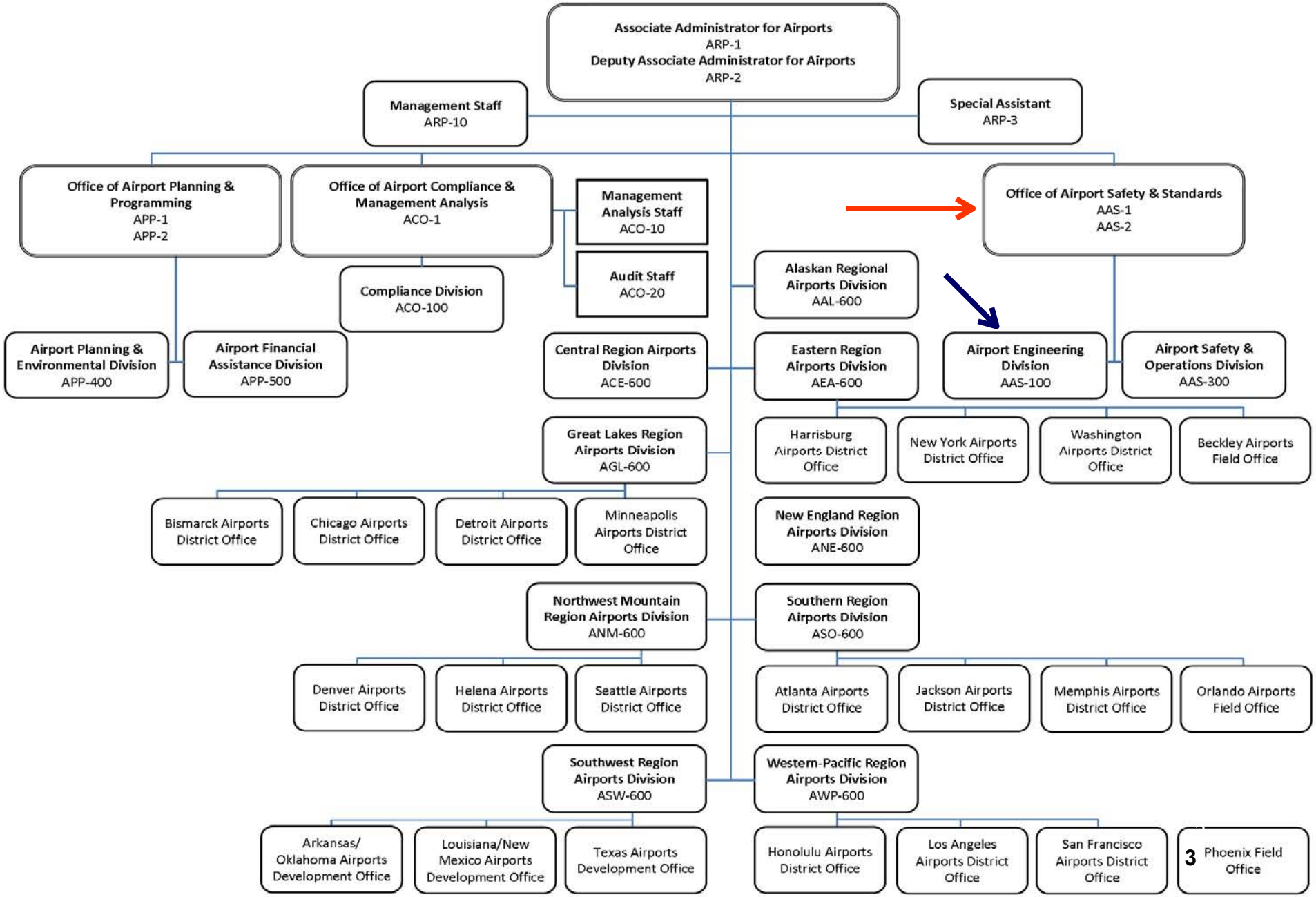
FAA OFFICE OF THE ASSOCIATE ADMINISTRATOR FOR AIRPORTS



Function within the Office of Airports (ARP)

- ARP Functions:
  - Planning and Programming
  - Financial Assistance
  - Safety and Standards

- Office of Airport Safety and Standards (AAS)
  - Engineering Standards
  - Operational Safety and Inspections

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Airport Engineering Division

- **Maintain over 80 of the airport series (150/5xxx) advisory circulars**
  - Standards for airport design, safety, construction, equipment, airfield lighting, signage and marking, and airfield pavements that are required for projects using AIP funds
  - Global leadership in international standards through ICAO
  - Maintain engineering briefs for additional guidance for airport projects.
  - Approves requests for modification of design or construction standards for individual projects.

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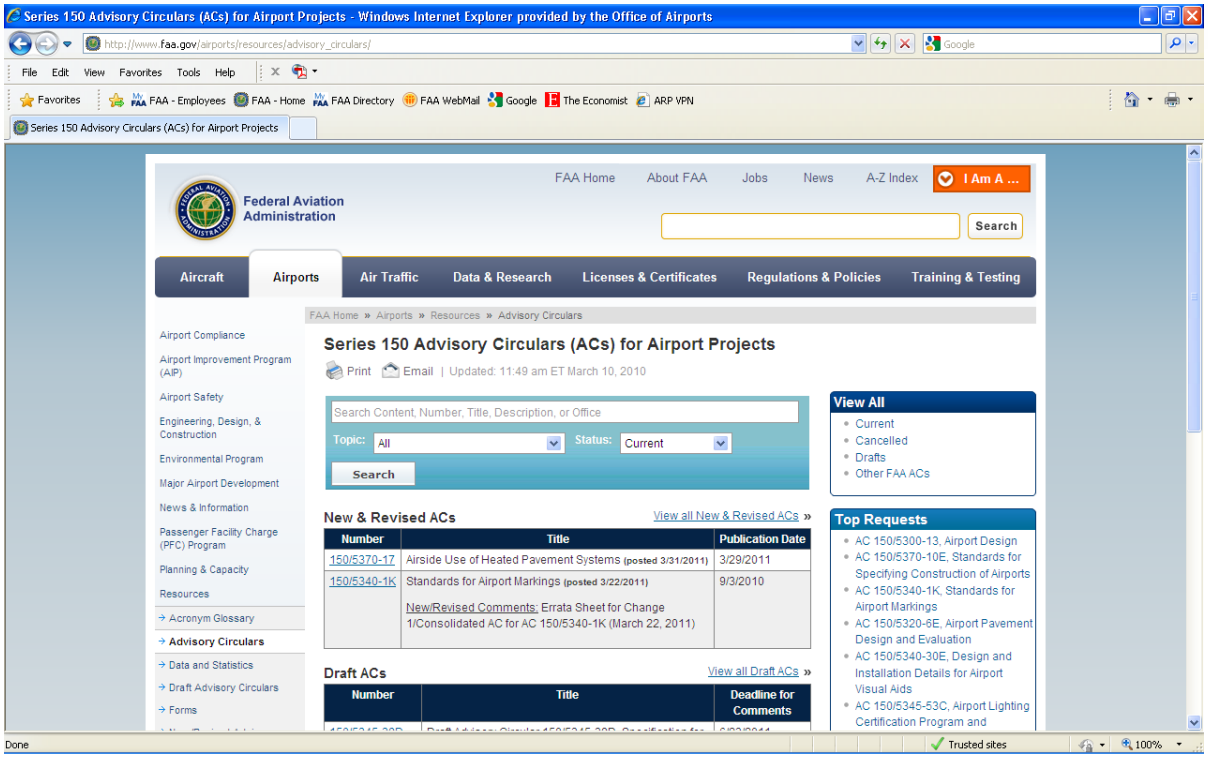
Advisory Circulars (ACs) / Engineering Briefs (EBs)



http://www.faa.gov/airports/resources/advisory_circulars/

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FAA AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM (ALECP)

AC 150/5345-53D

- Established January 1990.
- Under the ALECP, the FAA has established a list of accepted certification bodies (3rd party certifiers)
- Manufacturer submits certification request to the 3rd party certifiers; they in turn evaluate and certify airport lighting equipment against our AC's.
- Certificate is then issued and the product is listed and maintained in AC 150/5345-53D Addendum. This list is provided to assist airport sponsors to determine that equipment has met the applicable FAA specifications.

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Airport Lighting Equipment Certification

***Certification Program covers all equipment specified in the FAA AC 150/5345 series*:**

- **Rotating Beacons**
- **Obstruction Lights**
- **Wind Cones**
- **Isolation Transformers**
- **Taxiway / Runway Lights**
- **Retroreflective Markers**
- **Cable Connectors**

- **Underground Cable**
- **Runway & Taxiway Signs**
- **Portable Runway Lights**
- **Light Bases**
- **Constant Current Regulators**
- **Precision Approach Path Indicators (PAPI)**
- **Runway End Identification Lights (REIL)**

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AC 150/5345-53D Addendum,
Airport Lighting Equipment Certification Program Addendum

- Contains a complete update of the certified equipment and manufacturers lists.

- Equipment not listed here, but listed in prior addendums to the advisory circular are no longer certified.

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AC 150/5345-53D Addendum

October 16, 2013 AC 150/5345-53D Appendix 3 Addendum

L-861--Lights, Runway & Taxiway Edge, Medium Intensity
(AC 150/5345-46D)

Manufacturer	Type	Manufacturer's Catalog Number
ADB Airfield Solutions, LLC	L-861	44C1752-22X (33)(249), 44C1752-23X (33)(249), 44C1752-25X (33)(249)
	L-861	44C1752-28X (33)(249), 44C1752-20X (33)(249), 44C1752-2BX (33)(249)
	L-861	44C1081-21XX (11A), 44C1081-22XX (11A), 44C1081-29XX (11A),
	L-861(L)	EMIL-11XX0 (419),EMIL-41XX0 (419), EMIL-1XXX0 (419), EMIL-2XXX0 (419)
	L-861(L)	EMIL-3XXX0 (419), EMIL-4XXX0 (419), EMIL-5XXX0 (419), EMIL-BXXX0 (419)
	L-861(L)	IMIL-11X0 (418), IMIL-12XC0 (418), IMIL-21X0 (418), IMIL-22X0 (418)
	L-861(L)	IMIL-31X0 (418), IMIL-32X0 (418), IMIL-41X0 (418) IMIL-42X0 (418),
	L-861(L)	IMIL-51X0 (418), IMIL-52X0 (418)

L-861 and L-861(L)…(L) means LED version

3 digit number in parenthesis designates lighting technology.

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FAA Airfield LED Lighting Applicable Document

- Engineering Brief (EB) No 67
  "Light Sources Other Than Incandescent and Xenon For Airport and Obstruction Lighting Fixtures"

Memorandum

U.S. Department
of Transportation

**Federal Aviation
Administration**

Subject:	**INFORMATION:** Engineering Brief No.67D Light Sources Other Than Incandescent and Xenon For Airport and Obstruction Lighting Fixtures	Date:	March 6, 2012
From:	Manager, Airport Engineering Division, AAS-100	Reply to Attn. of:	
To:	All Regions Attn: Manager, Airports Division		

Engineering Brief No.67D provides additional requirements for light sources other than incandescent and xenon technologies subject to certification under Advisory Circular (AC) 150/5345-53, *Airport Lighting Equipment Certification Program*, and other applicable documents as required. It includes the required specific test and design requirements for alternative light sources that will be used in certified airfield lighting fixtures. This Engineering Brief ensures these new lighting technologies are seamlessly integrated with existing lighting technologies on the airfield.

Airfield Lighting Equipment Manufacturers employing alternative light sources in equipment certified under AC 150/5345-53 must meet the requirements contained in each applicable AC. The third party certification activity must verify the airfield lighting manufacturers' equipment meets the design and operational provisions as dictated by changing illuminating technology.

John R. Dermody

FAA EB 67 HISTORY

- First certification of LED Obstruction Light in ALECP- Sept 1999
- "FAA Supplemental Performance Requirements for LED Lighting Source" – July 10, 2001
- EB "XX"- Dec 2003 thru Nov 2004
- EB 67 - Nov 4, 2004
- EB 67 – Oct 26, 2005
- EB 67 B - March 12, 2007
- EB 67 C – December 29, 2010
- EB 67 D – March 6, 2012

FAA EB 67

- Provides additional requirements for “Light Sources Other Than Incandescent and Xenon For Airport and Obstruction Lighting Fixtures”
- Includes the required specific test and design requirements for alternative light sources (includes LEDs) that will be used in 3rd party certified airfield lighting fixtures.
- EB 67 ensures that new lighting technologies are seamlessly integrated with existing lighting technology.
- LED airport lighting manufacturer certified under ALECP must also meet the requirements contained in each applicable ACs

AC 150/5345-43J, Specification for Obstruction Lighting Equipment

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Federal Aviation
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Advisory Circular

Subject: Specification for Obstruction Lighting Equipment	**Date:** Draft **Initiated By:** AAS-100	**AC No:** 150/5345-43J **Change:**

1 **Purpose.**

This advisory circular (AC) contains the Federal Aviation Administration (FAA) specification for obstruction lighting equipment.

2 **Effective Date.**

Effective 12 months after the date of this circular, only that equipment qualified per this specification will be listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program*. No re-testing will be required for existing equipment where test standards are unchanged from the previous version of this AC.

3 **Cancellation.**

This AC cancels AC 150/5345-43H, *Specification for Obstruction Lighting Equipment*, dated September 28, 2016.

4 **Application.**

The Federal Aviation Administration recommends the guidance and specifications in this advisory circular for obstruction lighting equipment. In general, use of this AC is not mandatory. However, the use of the specifications in this AC is mandatory for lighting or projects funded under the Airport Improvement Program (AIP) or with revenue from the Passenger Facility Charges (PFC) program. All lighting designs contained in this AC are acceptable to the Administrator to meet the lighting requirements under Title 14 § 139.311, *Marking, Signs and Lighting*.

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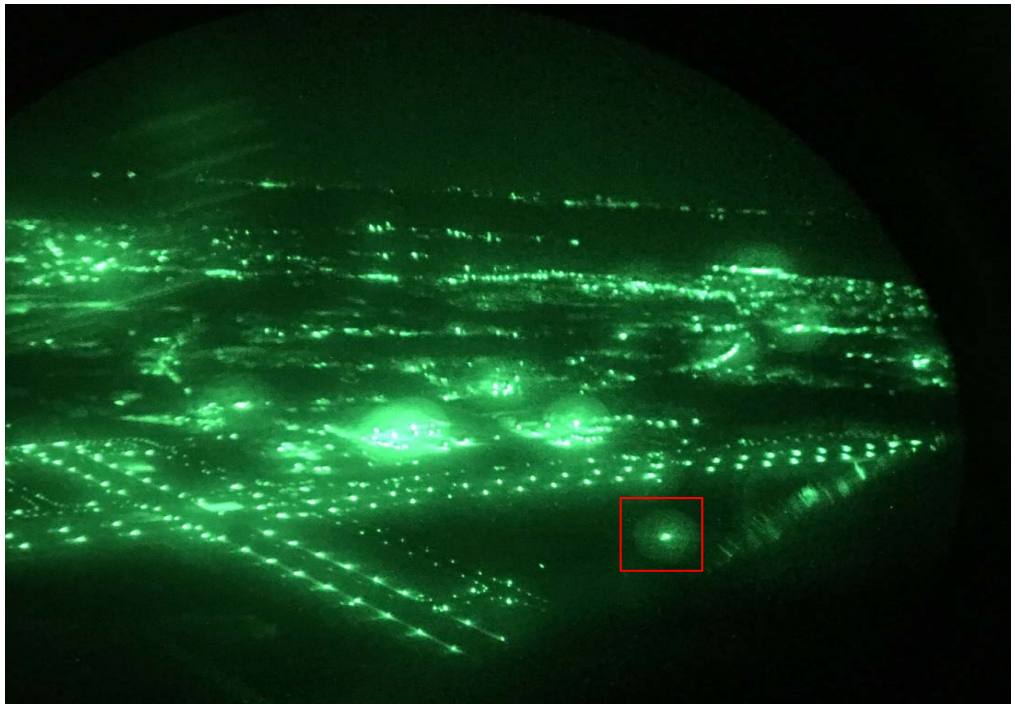
- Adds infrared specifications for Aviation Obstruction Light Compatibility with Night Vision Goggles (NVGs) per Engineering Brief 98 to allow infrared emitters to be included in LED obstruction lighting fixtures.

- The specifications for the IR emitters support the operational requirement for LED-lit obstruction lights to be visible to operators in AC 7460-1 “Obstruction Marking and Lighting”.

LED Obstruction Light with IR under NVGs



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Optional Monitoring:

1. If the IR emitter fails, the visible light is de-energized, and an alarm signal must be generated to provide an indication of the failure, (coupled).

OR

2. If the IR emitter fails, the visible light remains energized. The IR emitter is independently monitored in accordance with the monitoring requirements for FLASH/FAIL status of L-864, L-810 and L-885 visible light units. An alarm signal must be generated to provide an indication of the failure, (de-coupled).

Infrared Specifications for red LED Obstruction Lights

IR Wavelength (nominal)	Applicability	IR Vertical Beam Width	IR Radiant Intensity
800-900 nm	L-810 (L)	≥ 10°	Minimum: 4 mW/sr
	L-864 (L) and L-885 (L)	≥ 3°	Minimum: 246 mW/sr

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AC 150/5345-28, Precision Approach Path Indicator (PAPI) Systems

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Revisions

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Revisions to AC No. 150/5345-28

Section 3.2.1.7 <u>Photometric Requirements</u>
"…c. Alternatively, for PAPI systems that use incandescent light sources, the red light color may also be per the aviation red chromaticity coordinate requirements found in FAA Engineering Brief #67. (This difference shall be identified on the device and noted in the manufacturer's operation manual)."
Section 3.2.2 <u>Light Unit Construction</u>*"…The light unit must prevent dew or frost/ice from accumulating on its lens surfaces. This may be accomplished by thermostatically activated heating or intrinsic heat management (such as incandescent lamps)…"*

Section 3.2.3.1 <u>Adjusting Hardware</u>
"*Any adjusting hardware must be vibration resistant and prevent movement of the optical system. PAPI should be capable of modifying the horizontal light beam coverage of the PAPI for obstacle avoidance in the approach area and light signal obstructions. This can be accomplished using baffles, sometimes called blanking devices.*"

Questions?

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