



Federal Aviation
Administration

Airport Visual Aids

Illuminating Engineering Society

Airport Lighting Committee

October 14 - 19, 2012

Trade Winds

Island Grand Beach Resort

St. Pete Beach, FL

Presented by Alvin Logan

FAA AAS-100



AGENDA

- Advisory Circular 150/5340-30G Update
- Engineering Brief 67 Update
- Enhanced Flight Vision System
- Night Vision Goggles



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Advisory Circular Updates



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Advisory Circular Updates

- AC 150/5340-30G Published Sept 21, 2012
 - Added removal of filters for incandescent lamp and white/yellow fixtures.
 - Prohibiting the mixing of elevated and in-pavement light fixtures for runway threshold lights.
 - Added a reference to ICAO Aerodrome Design Manual, Part 5, Electrical Systems, for the technical aspects of interleaving airport lighting circuits.
 - Included a reference to FAA Order 8900.1 “Flight Standards Information Management System” (FSIMS) for RVR takeoff minima.



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IFR LOWER THAN STANDARD TAKE-OFF MINIMA RUNWAY STATUS LIST

Updated: **Oct 13, 2011**

Please forward any comments or questions to: 9-AWA-AFS-410-Feedback@faa.gov

This list contains runways with the equipment to support lower than standard takeoff operations, as authorized by OpSpec/LOA C078, C079, or C056. This list is considered "For Information Purposes Only" and may not be current. Each operator is responsible for ensuring full compliance with all requirements of OpSpec/LOA C078/C079 or C056 (as authorized) for each lower than standard takeoff.

Red lettering denotes a new listing within 30 days of date listed at top of spreadsheet.

BOLD RED indicates the latest update

ID / RW	FAC.	AIRP. ID	AIRPORT LOCATION	STATE	REGION	SERVICE AREA	Fl. Ch. Perf. Cat.	Runway Lights			RVR Systems			Reduced Takeoff Mins
								TDZL?	RCLS?	HIRL?	Touch Down	Mid	Roll-Out	
ACY/31	ILS	KACY	ATLANTIC CITY	NJ	EA	E	NA	N	Y	Y	Y	N	Y	500
PVO13	ILS	KACY	ATLANTIC CITY	NJ	EA	E	IT	Y	Y	Y	Y	N	Y	500
AGS/35	ILS	KAGS	AUGUSTA	GA	SO	E	IA	N	N	Y	Y	N	Y	1000
MZX/17	ILS	KAGS	AUGUSTA	GA	SO	E	IB	N	N	Y	Y	N	Y	1000
SPT/08	ILS	KABQ	ALBUQUERQUE	NM	SW	C	IE	Y	Y	Y	Y	N	N	1600
32		KAEX	ALEXANDRIA	LA	SW	C		N	N	Y	Y	N	Y	1600
ERJ/14	ILS	KAEX	ALEXANDRIA	LA	SW	C	IT	N	N	Y	Y	N	Y	1600



Advisory Circular Updates

- Updated “Displaced Threshold” language to state “equal to or less than 700 feet” for displaced threshold and centerline lights.
- Provided clarification to the criteria for the installation of elevated and in-pavement runway guard lights.



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Advisory Circular Updates

- Para 4.4b (1), (2) and (3)

- b. **Runway Guard Light Selection.** There are two configurations of runway guard lights. The following criteria should be used to determine which configuration should be installed at a specific runway holding position.
- (1) Elevated runway guard lights should be installed at the runway holding position if the taxiway does not have taxiway centerline lights installed and is 150 feet wide or less. However, if the taxiway has a stop bar installed at the runway holding position, elevated runway guard lights should be co-located with the stop bar, regardless of taxiway width or the presence of taxiway centerline lights.
 - (2) In-pavement runway guard lights should be installed at the runway holding position if the taxiway has centerline lights installed, or the taxiway is greater than 150 feet wide, or a stop bar is installed at the ILS critical area holding position.
 - (3) In-pavement combination stop bar/runway guard light fixtures (dual red/yellow lens) may be installed at the discretion of the airport operator. The yellow in-pavement lights may not be turned on when the stop bar is in operation. If the stop bar is located at an ILS critical area holding position, dual red/yellow fixtures should not be selected. (This would result in the installation of two sets of runway guard lights at different locations which serve the same intersection.)



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Advisory Circular Updates

- Provided clarification to the operation of elevated stop bar lights.
- Added language to better define the locations for supplemental wind cones.
- Paragraph 7.4d NOTE is added for PAPI installations on the right side of the runway.
 - NOTE: If the PAPI is installed on the right hand side of the runway, the light housing assemblies nearest the runway (inboard) must be seen as red and the two farthest from runway (outboard) must be seen as white. See Figure 81.



Advisory Circular Updates

- Paragraph 8.1.2e “Radio Control Equipment” is added for lightning protection.
 - Lightning Protection. Furnish and install lightning protection for the radio set per the manufacturer’s instructions.
- Updated paragraph 12.5 “Counterpoise” with a reference to recently revised NFPA 780, Standard for the Installation of Lightning Protection Systems.



Advisory Circular Updates

- Paragraph 12.12 is corrected for stainless steel bolts with black oxide coating. A reference to Engineering Brief #83 is added regarding the use of coated bolts.
 - The use of anti-seize coatings is not required when using coated bolts (ceramic-metallic/fluoropolymer coating) per Engineering Brief #83, In-Pavement Light Fixture Bolts.
- Paragraph 13.3 - NOTE is added relevant to modifications of airfield lighting standards in FAA Order JO 7110.65T.





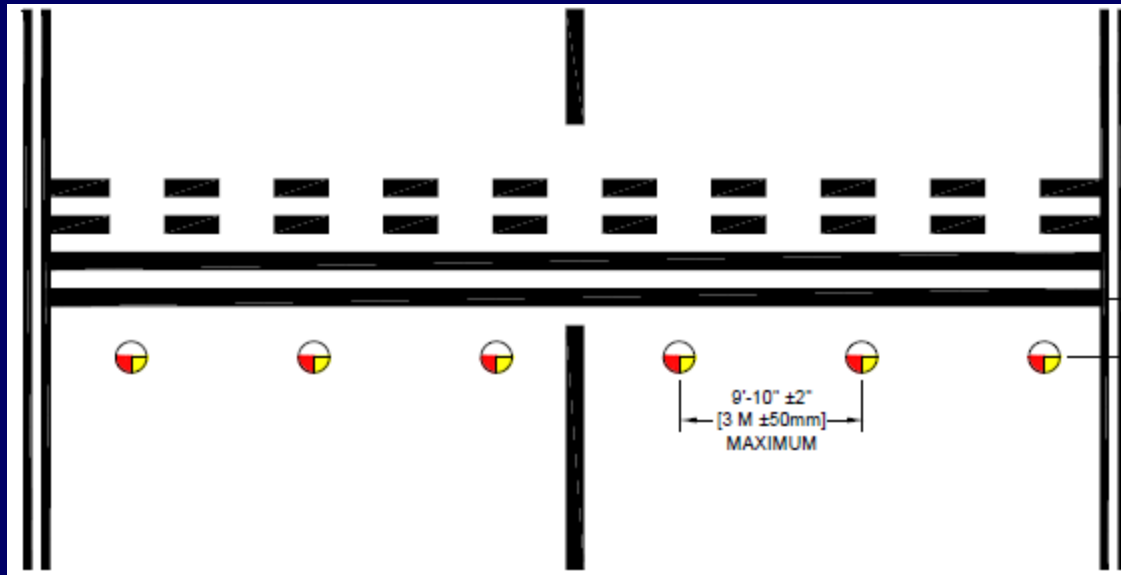
NOTE: *Airport Operators should inform Air Traffic Control of variances for or modifications to airfield lighting preset standards prescribed in Federal Aviation Administration requirements (see ORDER JO 7110.65T, Air Traffic Control, for additional information and requirements for airport runway and taxiway lighting).*



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Advisory Circular Updates

- Figure 50 is modified to show a combination RGL/stop bar light fixture.



Advisory Circular Updates

- Figure 76 is updated to eliminate dimensions for a standard illuminated wind cone assembly.
 - Dimensions are in AC 150/5345-27D
- Figure 81 is updated to show the PAPI on the right side of the runway.
- Figure 82 is updated to show the correct formula for a PAPI station that is displaced toward the runway threshold.
- Figure 108 is updated to add elevated edge reflectors and non-applicability to runway threshold/end lights.



Engineering Brief 67

Light Sources Other than Incandescent and Xenon
for Airport and Obstruction Lighting Fixtures



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Moratorium for LED RCLs/TDZ



Federal Aviation Administration

Memorandum

Date: SEP 17 2010
To: All Regional Airports Division Managers
From: *Rick Marinelli*
Rick Marinelli, Manager, Airport Engineering Division, AAS-100
Prepared by: Alvin Logan, Airport Engineering Division, AAS-100
Subject: Acquisition & Installation of Light Emitting Diode (LED) Runway Centerline and Touchdown Zone Lighting Systems

The purpose of this memorandum is to announce a moratorium on the acquisition and installation of FAA LED Runway Centerline (L-850A) and LED Touchdown Zone (L-850B) Lighting Fixtures built in accordance with Engineering Brief 67, "Light Sources Other Than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures" and listed in Appendix 1 of FAA AC 150/5345-53C Addendum, "Airport Lighting Equipment Certification Program".

Flight testing of the subject lighting systems has recently been conducted at Raleigh-Durham International Airport during nighttime VFR. The consensus reached was the lighting intensity of the LED fixtures exhibited bright signals even at the lowest step setting (step 1 of 5) of the constant current regulator.

The Airport Engineering Division is currently coordinating with industry to address this issue. We anticipate subsequent modifications to the Engineering Brief in the near future. Once the issue is resolved, we will notify the Regions of the product updates.

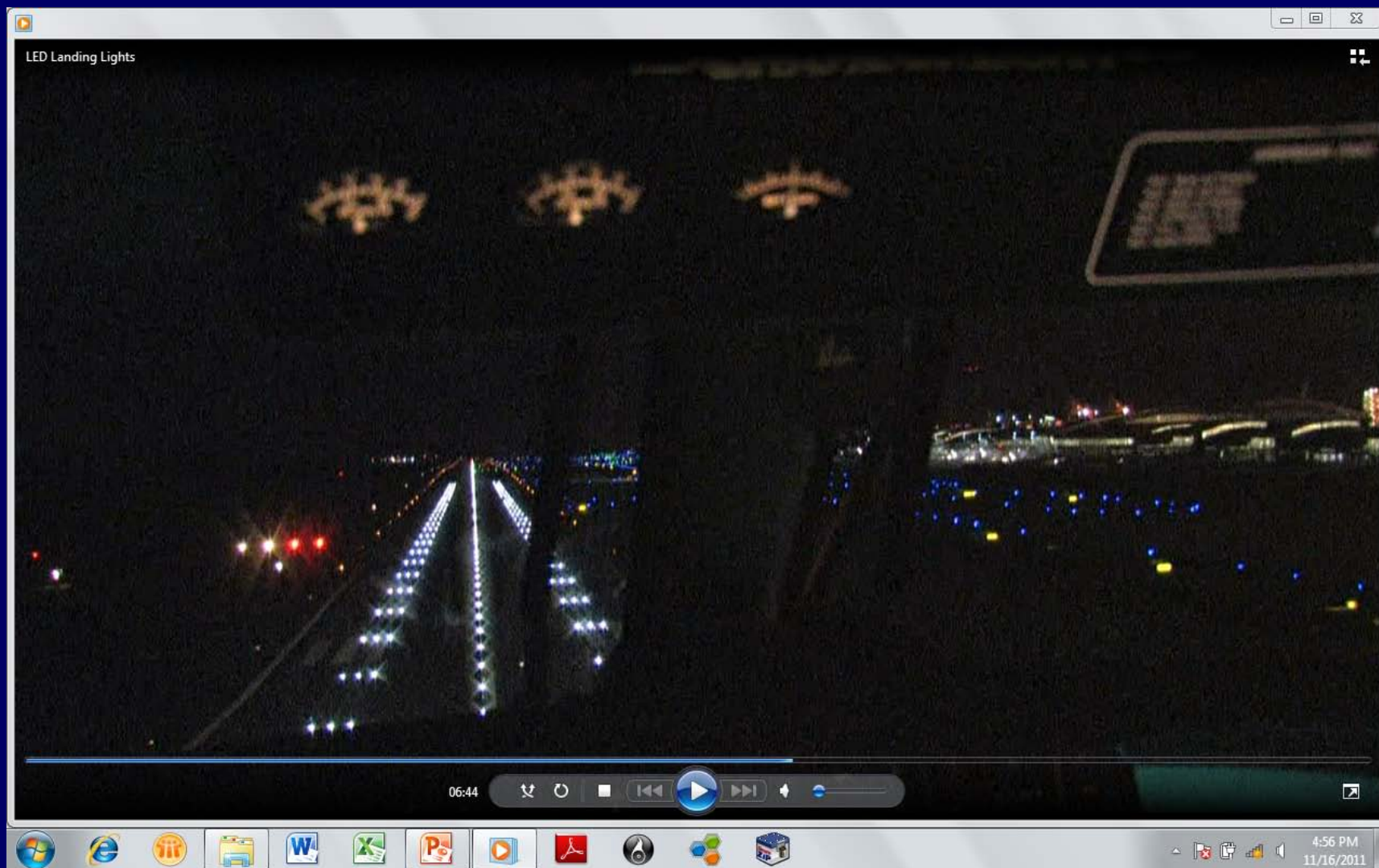
Please contact Alvin Logan at (202) 267-8743 with any questions.

**Moratorium on
LEDs announced.**



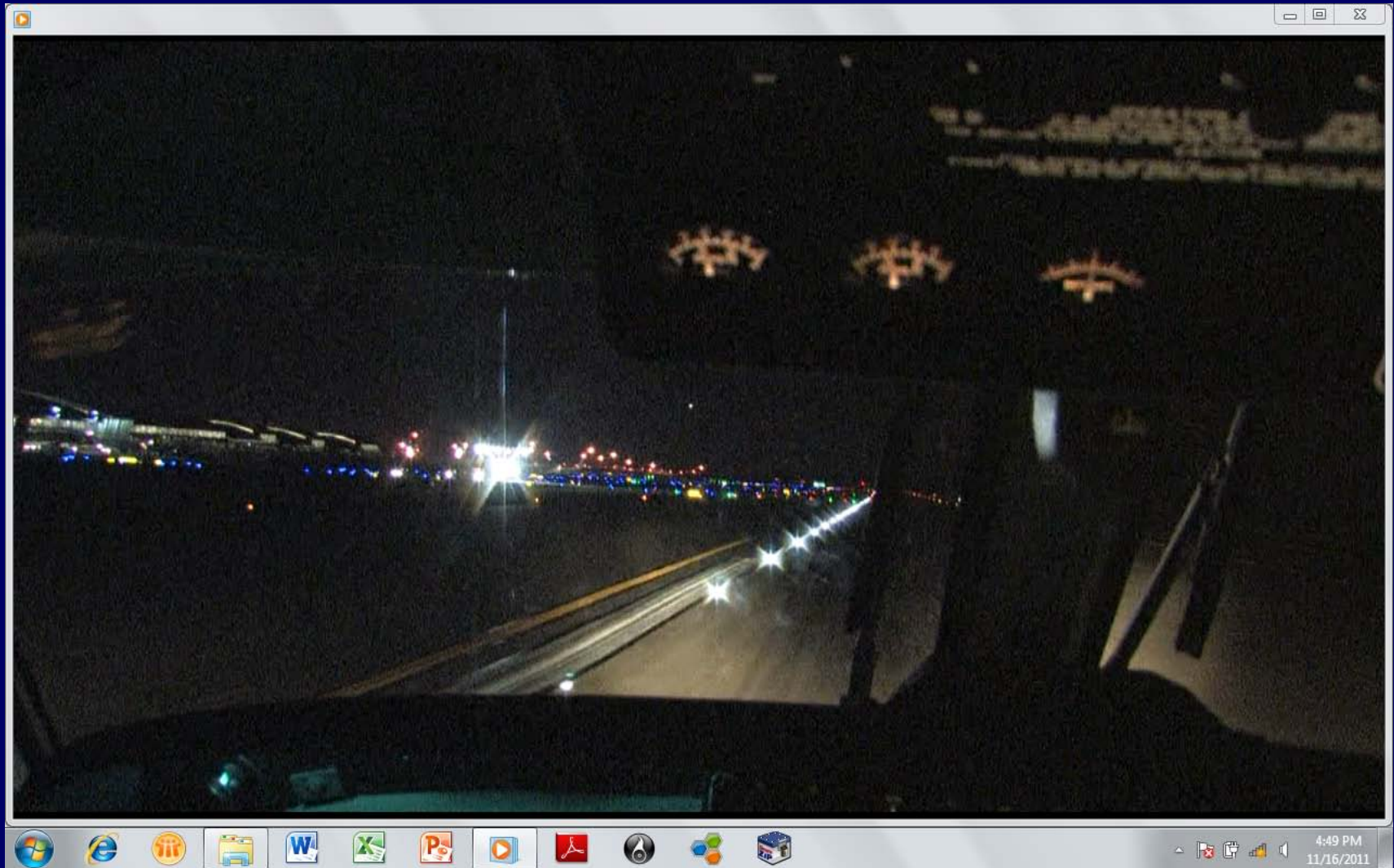
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LED Flight Testing at Raleigh Durham (RDU)



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LED RCLs at RDU



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Engineering Brief 67C Updates

- EB 67C, Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures (1/7/2011)
 - Defined new dimming curve for white light
 - Redefined aviation white chromaticity boundaries
 - Alternative lighting fixture accelerated life test
 - Alternative light fixture power factor and method of determination
 - Include new Category C2 surge protection requirements
 - Incorporated dominant wavelengths



Engineering Brief 67D Updates

- All LED light fixtures with the exception of obstruction lighting (AC 150/5345-43) must be warranted by the manufacturer for a minimum of 4 years after date of installation inclusive of all electronics.
- All LED type fixtures shall be designated as "L-XXX(L)"
- Example: The LED version of the taxiway edge light type will be specified as "L-861T(L)".



Engineering Brief 67D Updates

- “Where a light fixture type is available as both incandescent (L-XXX) or LED (L-XXX(L)), the owner must select the fixture type to be used, or must specify that either incandescent or LED are acceptable.”



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Program Guidance Letter for LEDs

- Program Guidance Letter (PGL) has been signed by Airports Planning and Programming
 - Addresses the impact of Engineering Brief (EB) 67D on AIP funded projects.
- Sponsor must specify either LED or incandescent.
- A life cycle cost analysis will no longer be required to permit the selection and use of LED fixtures for an AIP funded project.



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Program Guidance Letter for LEDs

- Exceptions: The FAA is reviewing the use of :
 - *LED Obstruction Lights*
 - *LED Approach Lights*
 - *LED High Intensity Runway Edge lights*
- For these reasons, LED obstruction lights, LED approach lights and LED high intensity runway edge lights are not AIP eligible at this time.



Draft Engineering Briefs

- EB-89 - Guidance for Taxiway Naming Convention
 - This Engineering Brief provides clarification for taxiway naming convention standards contained in FAA Advisory Circular (AC) 150/5340-18F, Standards for Airport Sign Systems.



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FAROS



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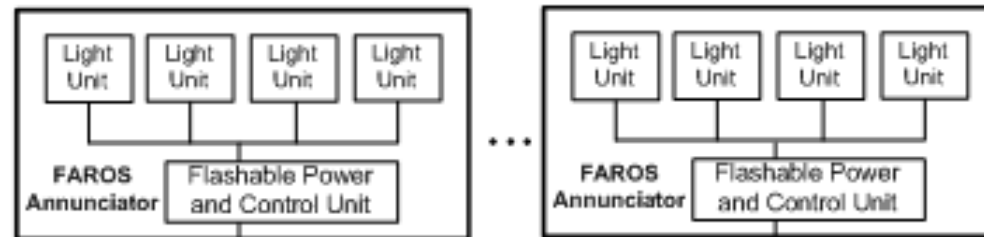
FAROS

- Developed by AJP-671, Research & Technology Development Office
- EB for FAROS/eFAROS
 - Design guidance for implementation of a direct warning system (based on LOOPs sensor) to airborne flight crews of runway occupancy status.
- The Office of Airports will request independent assessment to be conducted by the FAATC.



FAROS

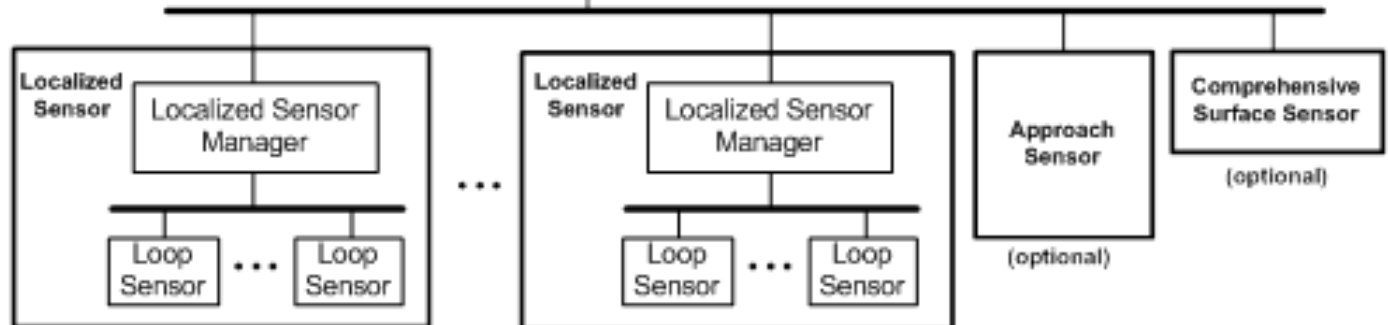
FAROS Annunciation
(User Interaction)



FAROS Safety Logic and Tracking
(Command Logic)

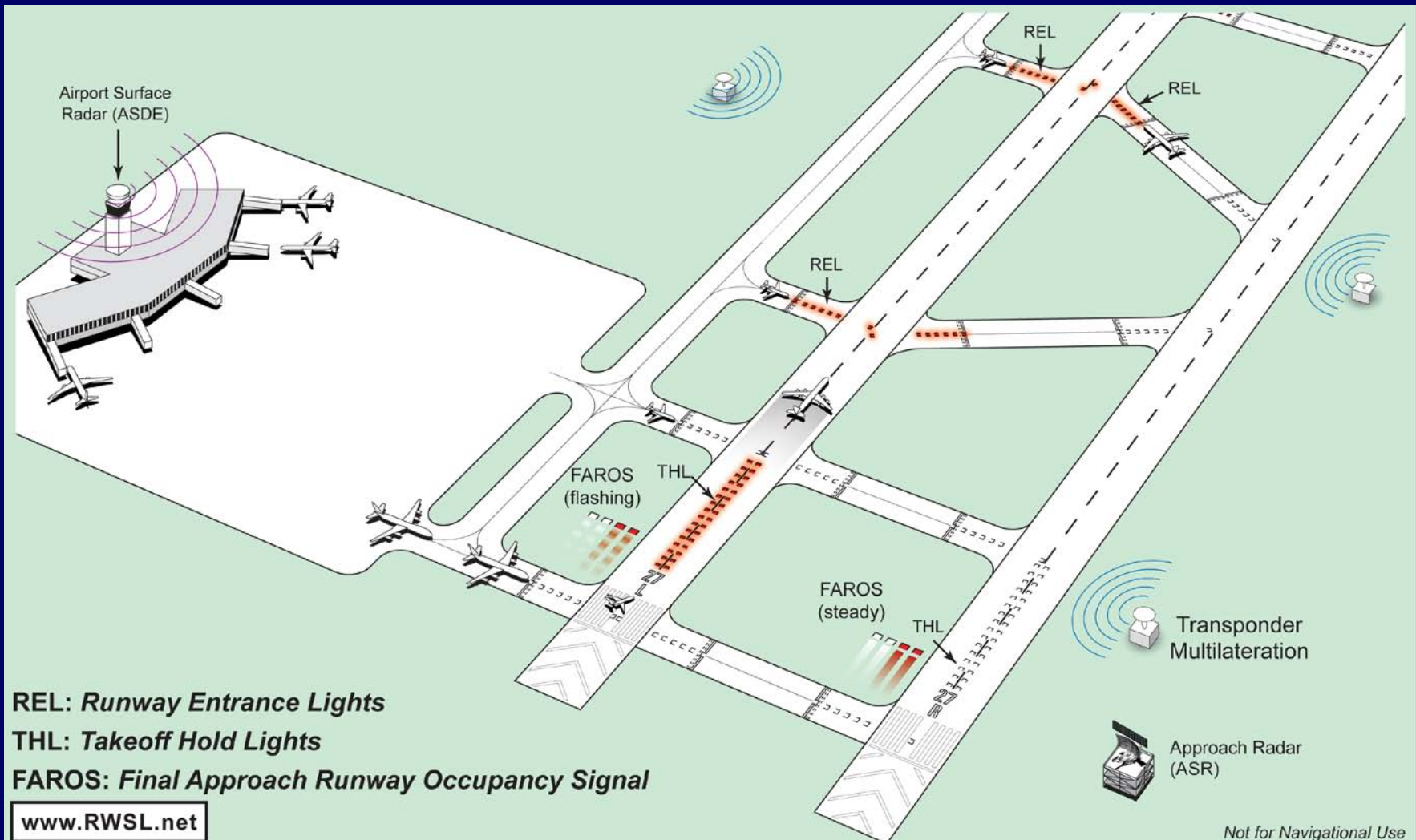


FAROS Localized Sensor
(Surveillance Input)



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FAROS Operational Concept



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EFVS



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Performance-Based Cockpit Technology in Low Visibility Operations

- Provides flight guidance on a HUD
- Provides a real time display of the outside world in low visibility conditions through the use of imaging sensors (forward looking infrared, millimeter wave, low-light level intensifying, etc.)



HUD + Sensor Imagery = EFVS



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Ongoing Actions for EFVS

- Participate in SAE G-20 committee meetings for EFVS.
- Participate in EFVS MALSR/IR program reviews within the Navigation Services Group.
- The Office of Aviation Safety, AVS-1 has requested an Operational Safety Assessment of LED lighting technology.



Night Vision Goggles



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MIL-STD-3009

METRIC

MIL-STD-3009
2 February 2001

SUPERSEDING
MIL-L-85762A

DEPARTMENT OF DEFENSE INTERFACE STANDARD

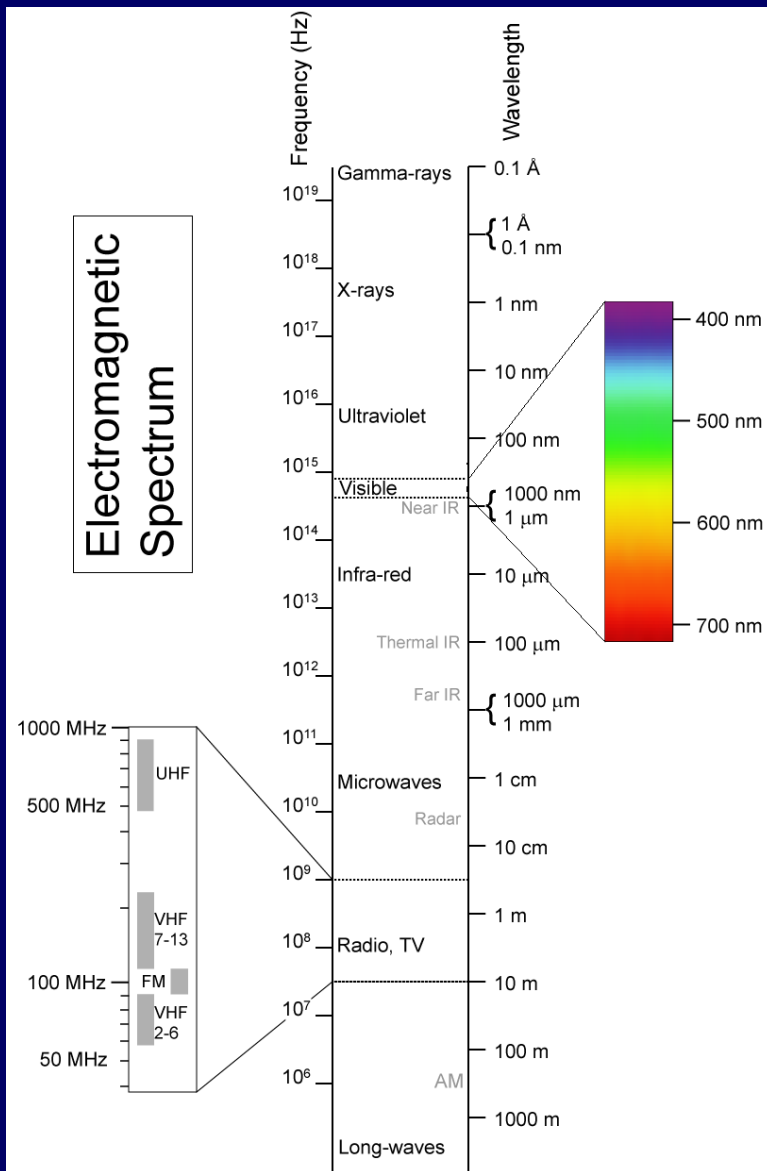


- LIGHTING, AIRCRAFT, NIGHT VISION IMAGING SYSTEM (NVIS) COMPATIBLE
- NVGs derived from military requirements.
- Provides interface requirements and testing methodology to ensure compatible and standardized aircraft interior lighting for NVIS compatibility.



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Night Vision Goggles



- **NVGs' spectral response in the range of approximately 600 to 900 nanometers in wavelength.**



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Runway Status Lights



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RWSL

- Purpose
 - Reduce frequency and severity of runway incursions
 - Prevent runway accidents
- RWSL increases situational awareness
 - RELs provide a *direct indication* to pilots when it is unsafe to cross or enter a runway
 - THLs provide a *direct indication* to pilots when it is unsafe to depart from a runway



RWSL

FAA RWSL In-pavement LED

- FAA Certified
- 12", Style III (<1/4" above pavement)
- Instant turn-on time, even in lower intensity steps.
- Fixtures are electronically monitored to detect individual fixture failure locations
- Available with optional heater

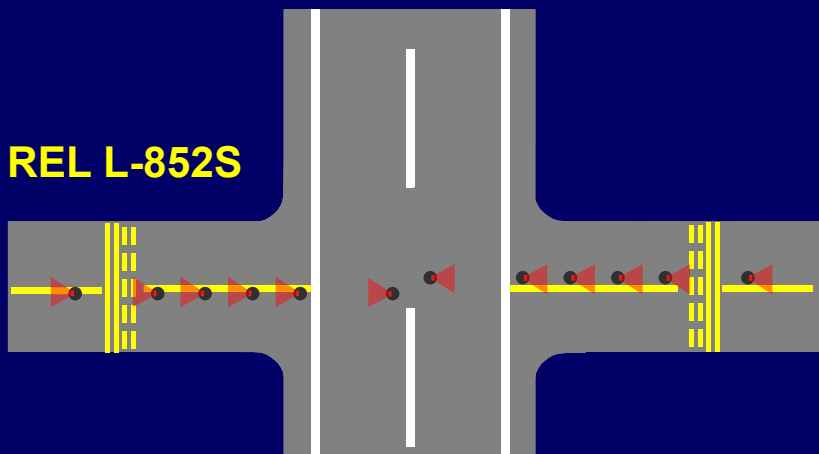


Runway Entrance Light
REL L-852S

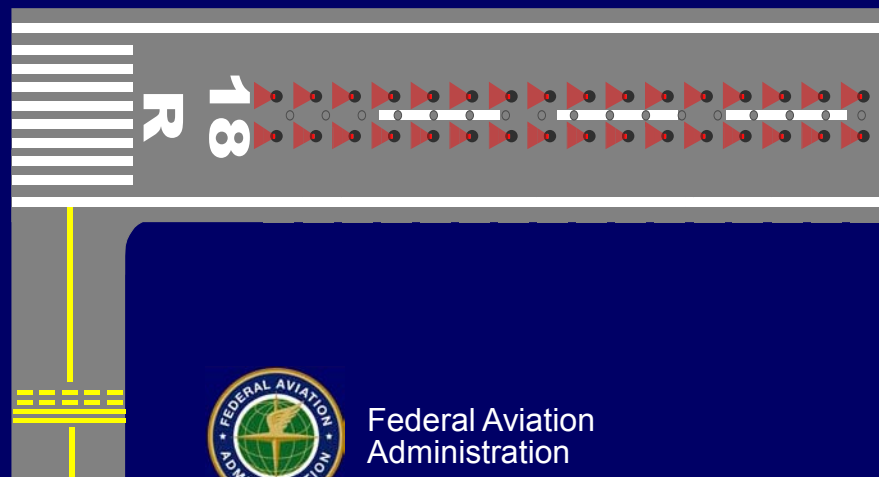


Takeoff Hold Light
THL L-850T

REL L-852S



THL L-850T



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RWSL SAFO



U.S. Department
of Transportation
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SAFO

Safety Alert for Operators

SAFO 11009

DATE: 10/26/11

Flight Standards Service
Washington, DC

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

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Runway Status Lights (RWSL)

Purpose: This SAFO serves to ensure that aircraft operators, pilots and airport personnel are aware of the installation, meaning, and use of RWSLs.



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Questions?



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