

Visual Aid Facility Maintenance Installation is just that start!

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**Federal Aviation
Administration**



Discussion Points

Visual Aid Facilities:

- Function
- Expectations
- Examples

Sponsor Obligations:

- Grant Assurances
- Grant Special Conditions
- Advisory Circulars

Maintenance Practices:

- AC 150/5340-26C
- Preventative Maintenance Program



Function and Expectations

Function of airport visual aid facilities:

- Assist in the safe and efficient movement of aircraft during landing, takeoff, and taxiing maneuvers.

Expectations for airport visual aid facilities:

- High degree of operating reliability.
 - This requires equipment be operational and monitored.
 - This requires that users are notified of any product short comings (NOTAMs)
 - This requires that an effective preventative maintenance program must be established and upheld.

**Installation is just the
start!**



Common Visual Aid Facilities

Include, but not limited to:

- Runway and taxiway elevated edge lighting systems;
- Illuminated runway and taxiway signs;
- Rotating beacons;
- Lighted wind cone assemblies;
- Precision Approach Path Indicator (PAPI) systems;
- Runway End Identifier Lights (REIL);
- Medium Intensity Approach Light Systems; and
- Obstruction Lights



Sponsor Obligations

Grant Assurances:

- Operation and Maintenance
 - Applies to airport and all facilities necessary to serve aeronautical users (other than those owned by United States).
 - Shall be operated at all times in a safe and serviceable condition.
 - Promptly notifying airmen of any condition affecting aeronautical use of the airport.

Grant Special Conditions:

- Specific Requirements are Typically Included in the Grant Offer

FAA AIP Funding and Advisory Circulars:

- AC 150/5340-26 C Maintenance of Airport Visual Aid Facilities



Sponsor Obligations

Grant Assurances:

- Operation and Maintenance

Grant Special Conditions:

- Specific Requirements are Typically Included in the Grant Offer
 - Commitment to operate and maintain during the useful life of the system.
 - Assure equipment meets standards prior to commissioning.
 - Remove, relocate, lower, mark or light each obstruction.

FAA AIP Funding and Advisory Circulars:

- AC 150/5340-26 C Maintenance of Airport Visual Aid Facilities



Sponsor Obligations

Grant Assurances:

- Operation and Maintenance

Grant Special Conditions:

- Specific Requirements are Typically Included in the Grant Offer

FAA AIP Funding and Advisory Circulars:

- AC 150/5340-26C Maintenance of Airport Visual Aid Facilities
 - Use of AC is mandatory for all projects funded through the Airport Improvement Program; and
 - Use of AC is mandatory for all projects funded with revenue from the Passenger Facility Charges (PFC) Program.



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Maintenance of Airport Visual Aid Facilities



Provides system maintenance information for establishing a preventative maintenance program for airport visual aid facilities.

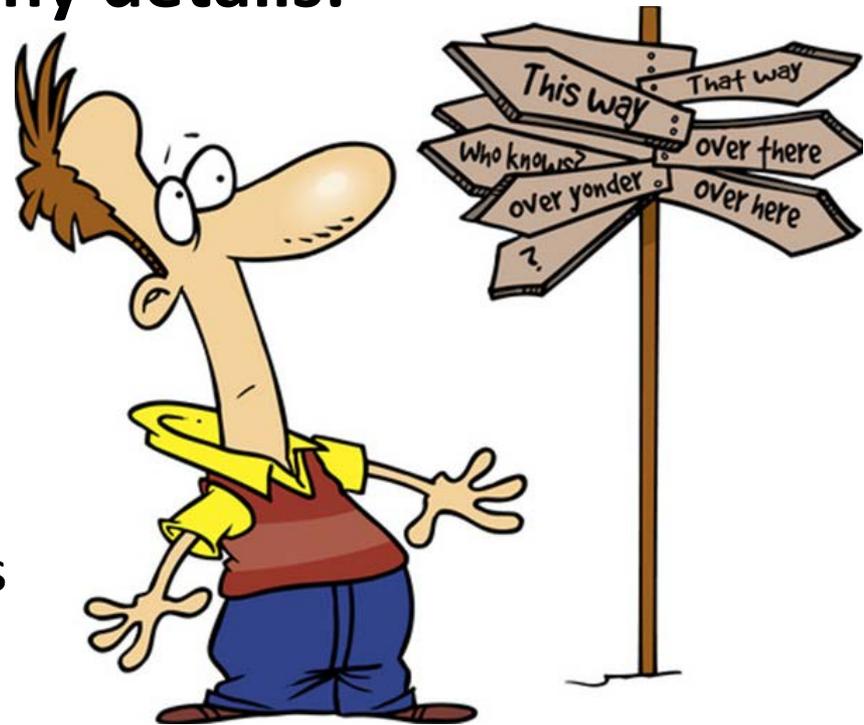


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Maintenance of Airport Visual Aid Facilities

Includes many items and many details:

- Use as one of the tools to establish a preventative maintenance program for the items at your airport.
- Not a stand alone item, but intended for use in conjunction with manufacture's specifications and requirements.

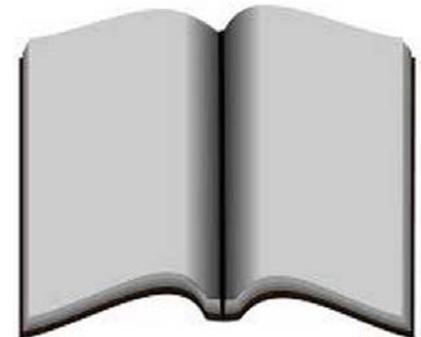


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Maintenance of Airport Visual Aid Facilities

Chapter 1. Introduction:

- Describes the purpose of the AC.
 - General guidance for recommended minimum maintenance practices.
 - Provides suggestions, but must be tailored for specific needs.
- Identifies the systems addressed in the AC.
 - 17 systems covered.
 - Identifies general system maintenance information.
- Relates the AC to other Applicable Documents.

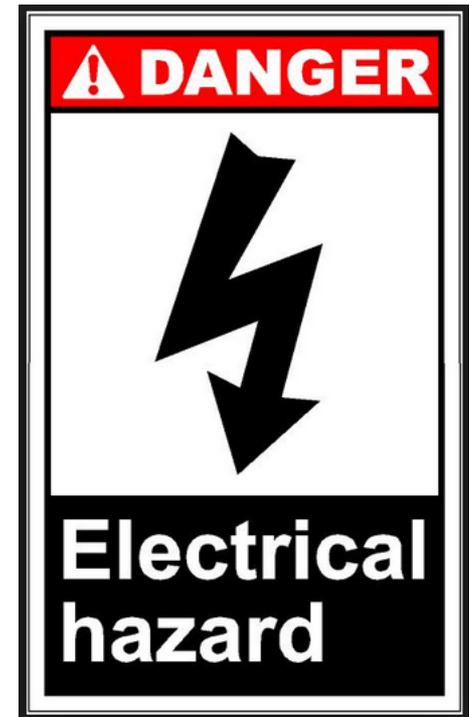


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Chapter 2. Safety:

- Safety is the responsibility of everyone.
- Think safety first!
- Look at the tasks required at your airport and use this as one of the many tools to proactively address safety.



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Maintenance of Airport Visual Aid Facilities

Chapter 3. Maintenance Management:

➤ Maintenance Philosophy:

- Ensure the maximum availability of any given system at a minimum cost in man-hours or funds.
- Essential elements to controlled maintenance program:
 1. Document the service checks that comprise the maintenance program.
 2. Record the performance of each maintenance action, scheduled or unscheduled.
 3. Document repairs and troubleshooting performed on each piece of equipment and the results of those actions as well as the symptoms related to the malfunction.



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Chapter 3. Maintenance Management:

➤ Document by spelling out each item of routine maintenance to:

1. Allow planned allocation of man-hours to the maintenance function.
2. Establish spare part stock levels.
3. Identify routines for new employees, thus decreasing training time needed for system familiarization.
4. Define scope of maintenance task in terms of man-hours and material requirements.



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Maintenance of Airport Visual Aid Facilities

Chapter 3. Maintenance Records:

- These ensure and document regular maintenance.
- Document the service history for each system.
- The records will help determine if task are too frequent or not often enough.
- Maintenance Logs for Lighted Navigational Aids
 - Keep logs for all non-federal navigational aids (PAPIs, VASIs, REIL)
 - See suggestion and example in Appendix B.



Example Maintenance Log. This log and the content below is intended as an example only

FACILITY MAINTENANCE LOG			AIRPORT	MONTH AND YEAR
			ANYSTATE, US	
			SUBJECT OF LOG	JANUARY 2014
			PAPI	
DATE	TIME	CODE	REMARKS	INITIALS
			January 2014	
02	1800		Arrived site. (for scheduled maintenance, unscheduled outage)	SM
	1801		Found PAPI lights out on second in board box.	SM
	1805		Notified OCC (XY, initials of person contacted). EUG NOTAM # 14/01 issued. Began maintenance.	SM



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Maintenance of Airport Visual Aid Facilities

Chapter 3. Reference Library:

- Maintain a master copy of all useful technical data.
- Ensure manuals and drawings are kept up to date.
- Typical items:
 - As-Built Drawings (record of what is actually in place)
 - Equipment Technical Manuals (manufacturer's literature)
 - Advisory Circulars (installation, design tolerances, and operation)
 - Other Technical Data (if you use it, include it)



**Write it down so you
don't have to remember!**



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Chapter 3. Spare Part Provisioning:

- What parts should be stocked?
- How many of each part?
 - Balance the cost of system downtime with the cost of purchasing and storing spare parts.
 - Failure Rate, Availability, and Effect of Failure



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Maintenance of Airport Visual Aid Facilities

Chapter 3. Lighted NAVAIDs Suspect in Accident:

- If FAA notifies that a lighted NAVAID is declared out of service due to it being suspect in an aircraft accident:
 1. Immediately inspect facility and record as found.
 2. Retain the as-found inspection record and store it at the airport manager's office for ready access by authorized personnel.
 3. Prepare a maintenance log entry and include a written statement that a facility "as-found inspection" is complete.
 4. Contact the Operational Control Center (OCC) to cancel NOTAM if functional.



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Chapter 3. Preventative Maintenance Program:

➤ Successful Preventative Maintenance Elements

1. Installation and Material – high quality, properly installed equipment
2. Personnel – trained and experienced personnel (reference library for support information)
3. Tools, Test Equipment, and Replacement Parts – know what you need and have it (spare parts and reference library)
4. Inspection Program – provides constant awareness of the equipment (plans and record keeping)
5. Inspection Schedule – frequency can be adjusted with experience as they systems performance is analyzed



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Chapter 4. Types of Test Equipment:

- Tasks involving troubleshooting and calibration are typically out of the norm for the average wireman.
 - Some circuits operate at potentially high voltages.
 - Some location require relatively low current measurements with accurate and calibrated equipment.
 - Recommended that every airport acquire:
 1. Volt-ohm-meter,
 2. Insulation tester, and
 3. True RMS measure clam-on AC ammeter or true RMS digital multimeter with an accurate clamp-on ammeter probe.

This supports the need for trained and experienced personnel.

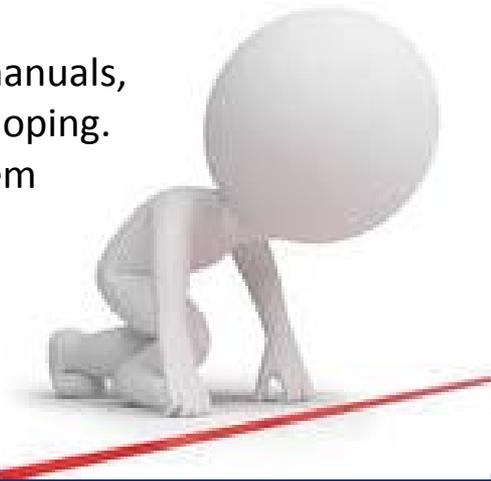


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Chapter 5. Preventative Maintenance:

- This chapter discusses preventative maintenance programs for specific systems. Use in conjunction with Appendix A Standards and Tolerances.
- Recommended routines which may be altered to suit local conditions.
- Good starting point for establishment of inspection requirements for airport's specific equipment.
 - Consider past performance, manufacture equipment technical manuals, and any other technical data (such as building codes) when developing.
 - Remember.... ensure the maximum availability of any given system at a minimum cost in man-hours or funds.



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Maintenance of Airport Visual Aid Facilities

Table 5-5. Preventive Maintenance Inspection Schedule for Runway and Taxiway Elevated Edge Lights

MAINTENANCE REQUIREMENT	D A I L Y	W K L Y	M T H L Y	S M A N Y	A N N L Y	U N S C H
1. Inspect for outages; repair as necessary	X					
2. Check cleanliness of lenses	X					
3. Perform photometric testing (HIRL) and check light alignment and orientation			X			X
4. Re-align lights as needed			X			X
5. Clean fixtures and sockets						X
6. Check light elevation				X		
7. Check for moisture in lights				X		
8. Inspect fixture for rust, deterioration					X	
9. Check lamp fitting and clean contacts					X	
10. Check gaskets					X	
11. Remove snow and/or vegetation from around lights						X



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Chapter 6. Troubleshooting Procedures:

- This chapter discusses various troubleshooting procedures.
 - After a thorough review, it has further proven the point regarding why Sponsors must hire highly skilled and competent individuals to perform these task.



Discussion

