ENGINEERING GUIDANCE 2013-03

SUBJECT: Standard Procedure for Flight Checking VGSI (PAPI & VASI) or REIL Installations

PURPOSE: This document defines when a VGSI or REIL needs to be flight checked and the process project managers must follow to assure successful flight checks.

REQUIREMENTS: Advisory Circular 150/5340-30G requires a commissioning inspection for all new or relocated VGSI(s) with an associated Instrument Flight Rules Procedure. This includes airports that have circling approaches. Flight Inspection is not required for airports that are only VFR and have no published instrument approach.

Order 8200.1, US Flight Inspection Manual, requires Flight Inspection on any new REIL installation at airports that have a published instrument approach, including circling approaches. Replacing existing REIL's do not require Flight Inspection.

ROLES and RESPONSIBILITES:

1. The Project Manager must initiate the airspace coordination process in accordance with Engineering Guidance 2012-03 and notify the Non Federal Project Implementation Manager (PIM) of any new PAPI or REIL installation during the project design phase. The designated ATO Non Federal PIM is Matt Gammon, (425) 203-4763.

2. The Airport Sponsor must establish a reimbursable agreement with flight inspection during the project design phase, and before a grant issuance (in the case of AIP funding, this will enable an estimate of flight check cost). This may be done by contacting Georgia Hines in Oklahoma, (405) 954-8545. Reimbursable Agreements for flight inspection take approximately two to three months to approve. Typical costs for flight checks run $5,000-$12,000. The flight check will not be scheduled until the airport sponsor pays the full amount of the reimbursable agreement.

3. The Project Manager must notify the PIM prior to the new installation being ready for flight inspection and send the "Data Information for VGSI Facilities Form" to the PIM. The PIM will set up the flight inspection schedule, and coordinate the flight inspection date with the airport sponsor. Expect at least a month between notifying the PIM and the flight check.

4. The Airport Sponsor, Consultant, or a Technician capable of making adjustments to the equipment, must be on-site during flight inspection, have VHF radios to communicate with the flight inspection aircraft (135.85 MHz is commonly used for flight check), and be capable to make any required adjustments to the equipment. Should the initial flight check be unsuccessful, the airport sponsor will have to adjust the equipment, enter into another reimbursable agreement, and schedule another flight check. In most cases, these costs would not be AIP eligible.

5. The Airport Sponsor will only be billed for actual flight time. Expect several months between the flight check and the final billing. The Project Manager should advise the airport sponsor that grant close out may be delayed pending the final flight check billing.

Attachments:

DATA INFORMATION FOR VGSI FACILITIES FORM

FORM DEFINITIONS (Attachment 1)

Approval: W h Watson Date: 1/16/13

DATA INFORMATION FOR VGSI FACILITIES

☐ PRELIMINARY ☐ MODIFIED ☐ EXISTING

REQUIRED DATA:

Airport Name:		Location:
Runway:	Airport Identifier:	Owner of VGSI:
Type of VGSI (Ex: VASI-2L, PAPI-2L, PAPI-4R):		
The distance in feet from the Runway Reference Point (RRP) to the runway threshold (or the displaced threshold if one exists). Distances to the nearest foot.		feet
The angle the VGSI is set to the hundredth of a degree.		

PROVIDE FOLLOWING DATA IF AVAILABLE:

The Threshold Crossing Height at threshold (or displaced threshold if one exists) to the tenth of a foot.	
The elevation of the runway centerline at the RRP. to the tenth of a foot. (Ex. 750.2) Submit elevations in NAVD88 vertical datum (may be in EGM-96 if military)	feet

The coordinates for both ends of the runway and all displaced thresholds
Submit coordinates in NAD/83 horizontal datum (may be in WGS/84 EGM-96 if military)
(data on record at flight check can be viewed at: http://avnwww.jccbi.gov/datasheet/)

Runway #	Latitude To the hundredth of a second	Longitude To the hundredth of a second	Elevation to the tenth of a foot

SUBMITTED BY:

Name:	Date:
Title:	Phone:
Organization:	E-mail:

Data forms should be sent to AJW by fax (405) 954-1329
or e-mail 9-AMC-AVN-AVN210-DATA@FAA.GOV
Questions? (405) 954-9122/5698/7937/5878/9937/2481/8927/3267

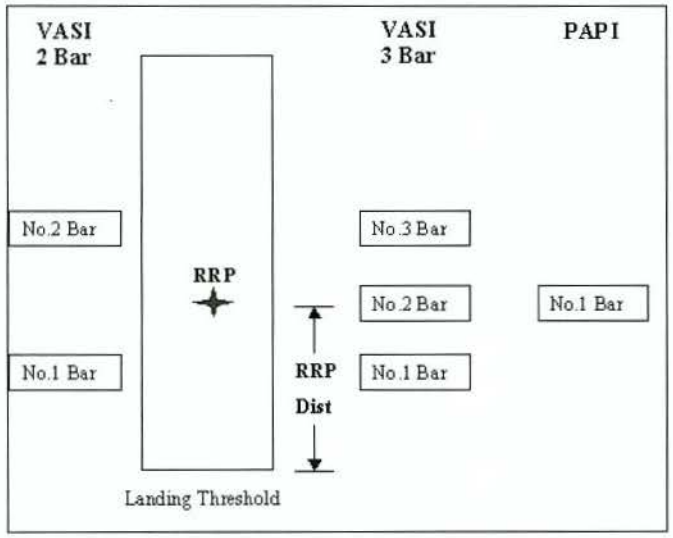
If using automated form, double click on grey areas to enter text

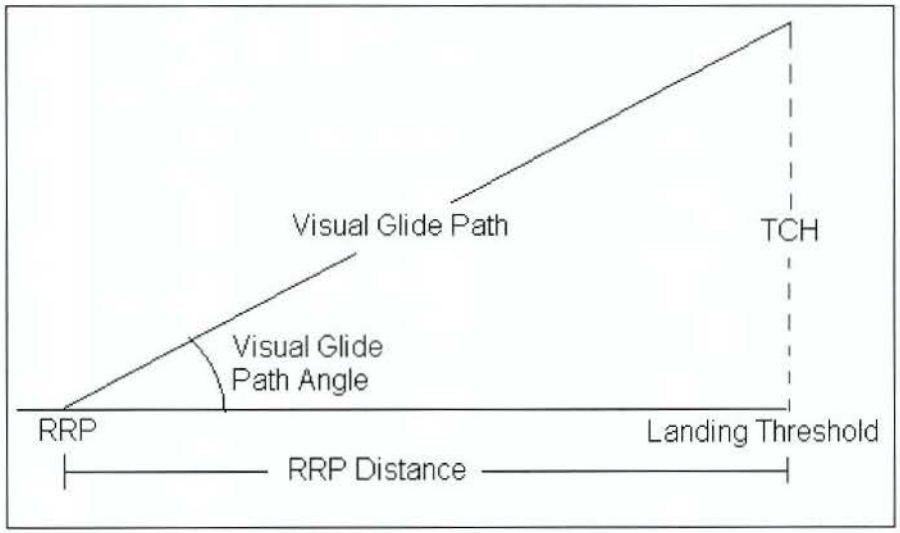
The following definitions and diagrams are provided to assist you in providing the data we request.

RRP - Runway Reference Point – where VGSI angle of visual approach path intersects runway profile

Landing Threshold – Runway threshold unless there is a displaced threshold. Distances should be to displaced threshold if it exists, otherwise to the runway threshold.

TCH – Threshold Crossing Height – the height of the straight line extension of the visual glide path straight above the landing threshold (Tangent of the angle times the RRP distance, then subtract the difference between threshold elevation and RRP elevation)





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This is the case 3 formula listed below: (Tangent GS angle times the distance TH from RPI) - (Threshold elevation – RRP elevation)

1. Formula for zero slope:

Tangent GS angle times the distance TH from RPI

2. Formula for positive slope runway:

(Tangent GS angle times the distance TH from RPI) + (RRP elevation – Threshold elevation)

3. Formula for negative slope runway:

(Tangent GS angle times the distance TH from RPI) - (Threshold elevation – RRP elevation)

In case 1, the RRP elevation will equal the TH elevation, so there will be zero difference, thus the answer will be the same.

Case 3 algebraically: -(threshold elevation – RRP elevation)

Equals -1 times (+ threshold elevation – RRP elevation)

-1 times (+ threshold elevation) equals - threshold elevation
-1 times (- RRP elevation) equals + RRP elevation

Thus '- (Threshold elevation – RRP elevation)' equals ' + (RRP elevation – Threshold elevation)'

Example: RRP = 450 Threshold = 420

'- (Threshold elevation – RRP elevation)' equals ' + (RRP elevation – Threshold elevation)'
'- (420 - 450) = -(-30) = $\underline{+30}$' equals '+(450 – 420) = +(+ 30) = $\underline{+30}$'

Either way, the difference is $\underline{+30}$ which would then be subtracted from the tangent of the Glidepath angle.

If the threshold were 450 and the RRP 420, then the answer would be $\underline{-30}$ which would then be subtracted from the tangent of the Glidepath angle, -(-30) = + 30, so the result would be adding the difference.

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