

## 1100 - Runway Commissioning

### General

Airport development projects often result in a physical change to airport runways and/or navigational aid facilities. Projects that may impact geometric features, elevations, and existing runway approaches include improvements such as:

- NAVAID establishment
- Runway extensions
- Runway shifts
- Pavement reconstruction
- Threshold Relocations
- Implementation of declared distances

In order to maintain current and accurate aeronautical data, airport operators must submit to the FAA appropriate survey information and related aeronautical information that accurately represent the physical improvement at the airport.

### Aeronautical Information Services

The FAA office of Aeronautical Information Services (AIS) is the single authoritative government source for collecting, validating, storing, maintaining and disseminating aeronautical data concerning the United States and its territories to support real-time aviation activities.

Within AIS, the National Flight Data Center (NFDC) serves as the principal element that collects and disseminates information detailing the physical description and operational status of all components of the National Airspace System (NAS). NFDC maintains the national aeronautical information database, the National Airspace System Resources (NASR).

The NASR provides official government source data that defines and describes the infrastructure of the NAS. NASR data originates from a wide spectrum of authorized sources, including Federal Government offices and systems, FAA air traffic facilities, airway facilities operations, regional offices, airport district offices, procedure developers, the Department of Defense, airport owners and operators, inspectors, and state governments.

### Role of the FAA Office of Airports

One mission of the FAA Office of Airports is to collect airport data for submission to the NASR. The FAA Office of Airports accomplishes this task under three separate programs.

1. Airport Safety Data Program (5010)
2. Obstruction Evaluation/Airport Airspace Analysis Program (OEAA)
3. Airport Geographic Information Systems (AGIS)

### What Information is required?

The type and extent of information that is required will vary per the extent of physical change and the type of approach that is impacted. The information requirements basically fall within the following categories

1. **Instrument Approach Runways** – Development projects that impact precision and non-precision runways require an aeronautical survey conforming to the following FAA Advisory Circulars:
  - 150/5300-16 - Establishment of Geodetic Control
  - 150/5300-17 - Airport Imagery Acquisition
  - 150/5300-18 - Field Data Collection and Geographic Information System (GIS) Standards

2. **Visual Runways** – Development projects that impact visual runways require survey information related to the runway end coordinates and threshold elevation.
3. **Commissioning Data (Runways and Navaid Facilities):** All development projects involving new or modified runways and facilities require advance submission of an updated Form 5010-1 - Airport Master Record and associated support documentation.
4. **Airport Diagrams** - Development projects that result in configuration changes to runways and taxiways require the submittal of an updated airport diagram. Note that only select airports have an airport diagram.

### **Purpose**

The FAA uses this information for several purposes. The FAA relies on information from the aeronautical survey data (AGIS) to modify existing runway approaches or develop new instrument approaches. This includes both precision and non-precision approaches.

The FAA uses the commissioning data and airport diagram information to update various databases and publications such as the Airport Master Record, Airport Facility Directory, as well as various charting and instrument approach publications.

### **When to Submit**

The timely submittal of information is critical to assure proper publication of accurate aeronautical data. The timing of the submittal is dependant upon the type of information and the intended purpose.

#### **Instrument Approach Procedures (IAP):**

The collection of data to modify or create approach procedures requires significant advance coordination in order to accommodate the processes necessary for survey validations and approach procedure development. We strongly recommend that sponsors of project requiring approach procedure development start the process **2-3 years** prior to the anticipated commissioning date. Refer to section AIP-1110 for additional information.

#### **Visual Runways:**

Since visual runway do not require development of approach procedures, the timing for submittal of information is not as time sensitive as that for a runway with approach procedures. The critical date for visual runways is the publication cut-off date. This is generally 6 weeks prior to publication. Sponsors should strive to submit necessary information to the FAA prior to this cut off date, which is published on the inside cover of the Airport/Facility Directory.

#### **Airport Master Record and Airport Diagrams:**

To meet critical publication dates, Sponsors should submit necessary information to the FAA no later than the cutoff date published on the insider cover of the Airport/Facility Directory.

Because some runways (visual approaches) and facilities (PAPIs) can be commissioned prior to a publishing date, we request sponsors submit such information 2 weeks prior to commissioning the runway or facility. The FAA does not permit this practice for runways with precision or non-precision approach procedures.

We request AIP sponsors and their consultants coordinate with the appropriate FAA project manager early on in the project design phase to determine the appropriate time to submit necessary information.

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### **Actual Runway Commissioning**

Twenty-four (24) hours prior to the actual commissioning of the runway, the Airport Operator shall submit a memo or email to the FAA project manager indicating the actual date of runway commissioning and whether or not all marking and lighting is in place and operational.

**Note:** The practice of publishing new procedures prior to completion of the runway improvement construction and/or equipment installation while subsequently issuing a NOTAM to N/A the newly revised procedure is no longer acceptable.

### **RESOURCES**

#### **FAA Offices**

- [Aeronautical Information Services](#) -
- [AeroNav Services - Free Digital Products](#) - Download A/FD and TPP publications

## 1110 – Instrument Approach Procedures (IAP) Data

### General

Airport development projects that impact existing Instrument Approach Procedures (IAP) or result in new approach procedures require the submittal of accurate survey information that meets the requirements of FAA Advisory Circulars 150/5300-16, 150/5300-17, and 150/5300-18. The FAA uses this information to develop or modify existing or create new approach procedures.

### Required Steps

While there are many steps involved in revising or establishing new approach procedures, the general steps include the following:

- a) Coordinate with FAA project manager regarding AIP eligibility and funding plan.
- b) Acquire qualified surveyor.
- c) Conduct AGIS survey in accordance with FAA Standards.
- d) Submit survey data to NGS for validation.
- e) Development of Approach procedures.
- f) Complete construction project
- g) Conduct as-built survey to confirm runway pavement constructed per design values.

### FAA Standards

The FAA requires accurate survey data in order to initiate the process of developing an approach procedure. The Airports Geographic Information System (AGIS) serves as the FAA’s official process for the collection and maintenance of airport and aeronautical data required to meet the demands of the Next Generation National Airspace System.

All data must be in the proper format in order for the National Geodetic Survey (NGS) to validate the accuracy and approve the collected data. The following FAA Advisory Circulars identify the procedures Sponsors must follow in order for proper collection and submittal of data.

- [AC 150/5300-16](#) - General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey
- [AC 150/5300-17](#) - General Guidance and Specifications for Aeronautical Surveys: Airport Imagery Acquisition and Submission to the National Geodetic Survey
- [AC 150/5300-18](#) - General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

**Note:** Sponsors and consultants shall no longer reference FAA standard 405 for acquiring aeronautical surveys. As of 2007, aeronautical surveys must comply with the standards previously noted.

### Expected Timeframes

The overall process of data collection followed by analysis, development and publishing of a new or revised approach procedure requires a considerable amount of time. Sponsors should plan on the following timeframes when establishing a project timeline.

Selection of consultants.....	2 months
Acquire Survey Data (Leaf-On) .....	8-10 months
NGS Validation and Troubleshooting .....	2-6 months
<u>Procedure Development.....</u>	<u>12-18 months</u>
Total Timeframe .....	24–36 Months

Note that the development process for instrument approach procedures cannot start until NGS validates the survey data. Failure to submit acceptable aeronautical survey data in a timely manner will likely delay implementation of approach procedures for the new or modified runway.

### **Project Formulation Meeting**

We strongly encourage sponsors and consultants establish a project meeting with the FAA approximately 2-3 years prior the anticipated runway project completion. This meeting should thoroughly address the acquisition and submittal of survey information and the requirements for procedure development.

### **Initiating Procedure Requests**

To facilitate proper planning for development of numerous approach procedures, the FAA requests Sponsors submit an online [Instrument Approach Procedure Request Form](#). This action helps the FAA procedure specialist better plan their workload.

We recommend the sponsor submit this request form at about the same time they initiate efforts to obtain an AGIS survey. Please note in the request form the current status of the survey acquisition and the anticipated date for submitting to the NGS. We also request that you identify in your request the last FAA approval date for your current airport layout plan.

Sponsors may track the progress of their request by viewing the [IAP production plan](#).

### **Sponsor Guidance for Selecting a Qualified Surveyor**

To assist sponsors with the process of selecting a surveyor, the FAA has included on the [AGIS Website](#) a section entitled "[Steps to Follow](#)". This web page provides suggested forms for the Request for Proposals and the Statement of Work. Sponsors should note that they are required to submit the statement of work (SOW) through the AGIS for FAA review and approval. Sponsors should avoid signing a contract for AGIS surveying prior to receiving FAA approval.

### **AGIS Survey Guidance**

The FAA implementation of AGIS represents a major paradigm shift from the previous method of collecting airport data. To address the large number of questions created by this change, the FAA has published "[A Guide to Airport Surveys](#)" (pdf). This guide addresses a variety of airport survey and AGIS topics such as:

- General responsibilities
- System processes
- Coordination requirements
- Data gathering, formulation and documentation
- AGIS use and navigation.

This guide identifies the most common mistakes that users make throughout the data gathering, formulation, and validation and approval processes. It also answers many of the "repeat" questions our office receives, outlines standard system processes required by field personnel, and identifies common procedural mistakes made throughout the survey process.

In additions to this guide, the [FAA AGIS website](#) also has a section entitled "[Surveyor Introduction](#)". This web page contains links to suggested forms, checklists and templates that surveyors should find beneficial.

### **AGIS Process**

The FAA AGIS website uses a data "Validation and Acceptance" workflow process. The AGIS website displays each step as well as tracks its completion. The process starts with the sponsor's initiation of the project. The next step requires the sponsor's submittal of the Statement of work for FAA approval.

Contractors and surveyors subsequently submit project data and quality control plans for review and approval. NGS will review appropriate plans and data for approval or corrective action. Once the NGS offers their approval of the quality control plans, the Sponsor's consultant may proceed with acquiring the survey data.

After the consultant completes the survey, we strongly recommend the surveyor utilize the "Test" feature prior to formally submitting the survey data. Running this "offline" test saves the contractor the time it would take to upload the file to the system, while providing the same level of validation feedback. We expect the surveyor to correct and errors identified in the validation summary report prior to formally submitting the survey data.

The process continues until the sponsor meets all project requirements and NGS officially validates the survey. Once NGS approves the survey, the FAA procedure specialist can proceed with developing approach procedures or amendments.

## RESOURCES

### Advisory Circulars

- [AC 150/5300-16](#) - General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey
- [AC 150/5300-17](#) - General Guidance and Specifications for Aeronautical Surveys: Airport Imagery Acquisition and Submission to the National Geodetic Survey
- [AC 150/5300-18](#) - General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

### FAA AGIS

- [FAA Airports GIS Website](#)
  - [Sponsor Steps to Follow](#) – Steps for Selecting a Surveyor
  - [Surveyor Introduction](#)

### National Geodetic Survey

- [NGS Aeronautical Web Site](#)
- [NGS PACS/SACS Data Sheets](#)

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## 1120 – Visual Runways

### General

Currently, AIP development projects that involve runways with visual approaches do not require the same level of survey as that required for instrument approach procedures. Sponsors should note that this may change over time with the implementation of the FAA AGIS system and electronic ALPs (e-ALPs)

### What information is required?

Along with a mark-up of the 5010-1 form (Refer to AIP 1130), Sponsor must submit the following information:

- Runway end coordinate (NAD 83)
- Runway threshold elevation (NAVD 88)
- Touchdown Elevation (NAVD 88)
- Runway length
- Runway width

The Sponsor must base the information submittal upon a field survey conducted by a registered surveyor. The surveyor must seal and date the survey.

Airport owners should note that a visual approach with circling minimums may require an obstruction survey. Contact the FAA project manager to discuss this issue.

### When to submit

Since visual runways do not require development of approach procedures, the timing for submittal of information is less time sensitive as that required for a runway with approach procedures.

To meet publication dates, Sponsors should strive to submit necessary information to the FAA **prior** to the cut off date noted on the inside cover of the Airport/Facility Directory. This deadline is generally 6 weeks prior to publication.

Because visual runways can be commissioned prior to a publishing date, we request sponsors submit such information no later than 2 weeks prior to commissioning of the runway.

### How to submit?

Submit the survey documentation directly to the FAA project manager that is handling the AIP funded grant. The FAA project manager may request additional information to process the submittal.

## 1130 - Airport Master Record (5010) Updates

### General

Regardless of the type of approach (visual, non-precision, or precision) or the funding source (AIP, State, or local), airport operators must submit runway commissioning information to the FAA in order to update the FAA aeronautical database. The process for submitting the information will differ per the type of modification and whether AIP funding is involved.

### 5010 Data Elements

#### AIP Development Projects

- Mark up a copy of the current 5010 report that indicates all applicable modifications to the applicable elements of the airport master record. Refer to [FAA Advisory Circular AC 150/5200-35](#) for detailed information and descriptions for each data element.
- Clearly identify all changes to the runway configuration data. Note that the associated field survey data must confirm the 5010 revisions.

#### Runway Data

Element	Data Element
30	RUNWAY IDENTIFICATION
31	LENGTH
32	WIDTH
33	SURFACE-TYPE & CONDITION
34	SURFACE TREATMENT
35	GROSS WT:(Single Wheel)
36	GROSS WT: DW
37	GROSS WT DTW
38	GROSS WT DDTW
39	PCN

#### Lighting/Approach Aids

Element	Data Element
40	EDGE INTENSITY
42	RWY MARK TYPE –CONDITION
43	VGSI-Visual Glide Slope Indicator
44	THRESHOLD CROSSING HEIGHT
45	VISUAL GLIDE ANGLE
46	CENTERLINE TOUCHDOWN ZONE
47	RVR-RVV
48	REIL
49	APPROACH CH LGHTS

#### Obstruction Data

Element	Data Element
50	FAR PART 77 CATEGORY
51	DISPLACED THRESHOLD
52	CONTROLLING OBSTRUCTION
53	OBSTRUCTION MARKED AND LIGHTED
54	HEIGHT ABOVE RUNWAY END
55	DISTANCE FROM RUNWAY END
56	CENTERLINE OFFSET
57	OBSTRUCTION CLEARANCE
58	CLOSE IN OBSTRUCTION

#### Declared Distances

Element	Data Element
60	TORA (Take Off Runway Available)
61	TODA (Take Off Distance Available)
62	ASDA (Available Stopping Distance Available)
63	LDA (Landing Distance Available)



- The sponsor (or their consultant) shall submit the updated Airport Master Record (FAA Form 5010-1) to the FAA project manager no later than two weeks prior to the anticipated commissioning date. To avoid duplication, please submit all changes under one submittal. Please do not piecemeal the revised data.
- The name of the person submitting the revisions shall be clear on the redline 5010-1 form or within the email that transmits the redlined form.
- **CAUTION:** Airport operators should avoid opening new runway pavements or energizing new Navaids without proper NOTAMS in place and the proper submittal of the updated 5010 data. Sponsors that fail to take proper action to update Notams and aeronautical information may incur liability for inaccurate published information.

### General Airport Information

- Sponsors **should not** submit updates of general airport information to the FAA project manager. Such changes include the following items
  - General (elements 10-26)
  - Services (elements 70-76)
  - Facilities (elements 80-89)
  - Based Aircraft (elements 90-86)
  - Operations (elements 100-105)

Airport operators should submit these changes directly to:

Federal Aviation Administration  
Aeronautical Information Services  
800 Independence Ave. S.W.  
Washington D.C 20591  
Phone 1-866-295-8236

or by email to:

9-ATOR-HQ-AIS-AIRPORTCHANGES@FAA.GOV

### Supporting Documentation

The submittal of a red-lined 5010 is not by itself sufficient information to permit the FAA to act upon the request. The FAA may need additional supporting documentation that justifies why the revision is necessary. This information varies per the type of revision a sponsor requests.

#### Changes in Runway Width and length

Requires a current survey sealed by a registered land surveyor that captures the following information:

- Runway end coordinate (NAD 83)
- Runway threshold elevation (NAVD 88)
- Touchdown Elevation (NAVD 88)
- Runway length
- Runway width

#### Change is Runway Strength

Requires submittal of a current pavement design form (FAA form 5100-1) signed by a qualified engineer. Submittal of this form typically occurs with the engineer's report early in the project design phase.

#### Visual Guidance Slope Indicators (VASI and PAPI)

Requires prior submittal of a VGSI commissioning data form (FAA AVN form) and an engineer's certification stating the obstacle clearance surface is free of objects.

**Obstruction Removal**

Requires submittal of a letter from the Sponsor that certifies they have removed the controlling obstruction identified on the current 5010-1.

**Submittal Timeframe**

To meet critical publication dates, Sponsors should submit necessary information to the FAA no later than the cutoff date published on the insider cover of the Airport/Facility Directory. This date is typically six weeks prior to the publication date.

**Reporting Date of Actual Commissioning**

On the day of the actual commissioning, the sponsor shall submit a memo (or email) to the FAA project manager stating that the runway/navaid/airport is open to public for aircraft operations.

The sponsor/consultant shall indicate whether marking, lighting and NAVAIDS are in place and operational as of the opening date.

At the time of the actual commissioning, the sponsor will also need to contact the Flight Service Station to issue a NOTAM for the commissioning of the runway/airport. This NOTAM should identify the new dimensions and surface type of the runway. This NOTAM shall be left in effect until appropriate publications reflect the physical airfield changes.

**RESOURCES****Sample Documents**

- [Sample 5010-1 Mark-up](#)

**Databases**

- [Online 5010's \(GCR Rigmar\)](#)

## **1140 - Commissioning of Non-Federal VGSI**

### **General**

The commissioning of a non-fed visual guidance slope indicator (typically a VASI or a PAPI) does not end with the physical installation of the equipment. Airport operators shall avoid energizing a VGSI until proper advance coordination is complete.

### **Why Flight Check a VGSI?**

In the past, many existing VGSI installations were placed in service without flight inspection. This includes circling approaches. Now, a commissioning inspection is required for all new VGSI's with an associated IFR procedure.

The FAA's position is that visual glide slope indicators (such as PAPI, VASI, etc) form an integral part of any instrument procedures to an airport and deserve an official flight check. This flight check will not only confirm visibility and correct signal presentation, but will also check for coincidence of the VGSI with other navigational aids serving the runway, confirm obstacle clearance, verify light intensity, and check for other limitations to the signal presentation.

There are four critical actions a sponsor needs to undertake prior to commissioning a new or relocated VGSI:

- 1) Verification of the Obstacle Clearance Surface
- 2) Submittal of VGSI facility data
- 3) FAA Flight Check of the installed equipment
- 4) Update of the Airport Master Record (FAA 5010-1)

### **Obstacle Clearance Surface (OCS)**

The first step in commissioning a VGSI is confirming the obstacle clearance surface is clear of objects. This typically occurs during the design phase of the project. Section 7.5 of AC 150/5340-30D defines the OCS for PAPI systems. We request the Sponsor's engineering consultant provide a sealed certification attesting the OCS is clear of all penetrating objects.

### **Submittal of VGSI Facility Data**

Approximately 45 days prior to physical completion of the equipment installation, collect and submit the following data for each individual VGSI:

- Airport Name
- Location
- Airport Identifier
- Runway
- Owner of Equipment
- Indicate if new or modified equipment.
- Type of VGSI (Example VASI-2L, PAPI-4R etc)
- Distance from Runway Reference Point (RRP) to the runway threshold
- Angle of the VGSI to nearest hundredth of a degree (eg. 3.00°)
- Threshold crossing height (TCH) calculate to the nearest tenth of a foot
- Elevation of the runway centerline at the RRP to the nearest tenth of a foot. (Elevation data must be submitted based on NAVD88 vertical datum).
- The geodetic coordinates and elevation for both ends of the runway. (Coordinate data must be submitted based on NAD83 datum.
- Identify name and phone number of person submitting the information

To facilitate this submittal, FAA AVN has prepared a suggested VGSI data form Sponsor may use to submit this data. Contact your FAA project manager to obtain a copy of this recommended form. The Sponsor should submit the completed form to the FAA point of contact noted on the form:

**Fax:** (405) 954-1329  
**e-mail:** 9-AMC-AVN-AVN210-DATA@FAA.GOV

Please submit a courtesy copy to the FAA project manager

### **Schedule FAA Flight Check**

While the submittal of the VGSI data to the noted office can prompt the scheduling of a facility check, this action is not always assured. If you have not been contacted within a week of submitting the form, contact the Central Services flight check scheduler at (405) 954-9780. The scheduler for your geographic area will coordinate a time and date for the flight check.

Please note there is no charge for flight inspection services for non-Fed facilities. Please refrain from entering into any FAA reimbursable agreement for non-Fed installations.

For most projects, there will be a gap between the contractor completing the project and the day it gets flight checked. Except for initial functionality tests, the airport operator should keep the VGSI turned off until it is time for the flight check. On the day of the flight check, turn the VGSI on. The flight check crew will let the airport operator know through the ATCT or on the UNICOM frequency if the flight check was satisfactory.

The airport operator should receive a full flight inspection report within about 90 days of the flight check. It will be sent to the email address on the form you sent in earlier. If you don't receive the flight check report, call (405) 954-1862 to request your report.

### **Updating the Airport Master Record**

Completing all the data submission and flight check actions doesn't get your VGSI into the Airport/Facility Directory. To complete the process, airport operators must update their airport master record (FAA 5010-1 form)

Section 1030 of the Central region AIP sponsor guide addresses how sponsor can update their 5010-1 information. The form should be "red-lined," that is, it should show a pen-and-ink change adding or updating the VGSI for that runway. For VGSI facilities, the specific lines to update are 43, 44, and 45.

The name of the person submitting the revisions shall be clear on the redline 5010-1 form or within the email that transmits the redlined form.

To meet publication deadlines, we recommend the airport operator submit this information to the FAA project manager prior to or at the same time the flight check is schedule. Upon flight check acceptance immediately notify the FAA project manager via email.

## **RESOURCES**

### **Sample Documents**

- [Sample 5010-1 Mark-up](#)

### **Databases**

- [Online 5010's \(GCR Rigmar\)](#)

## 1150 - Updating Airport Diagrams

### Overview

The FAA publishes Airport Diagrams for select towered airport. These diagrams are located in the back of the current Airport/Facility Directory. Airports owners must take appropriate action to update these diagrams when significant configuration changes occur. For AIP development projects, this results when there is a physical change to airport runways, taxiways and terminal aprons.

### How to Update

The sponsor must submit a diagram with sufficient detail that highlights the changes that result from the improvement.

The preferred method for updating an airport diagram is to download a copy of the current diagram and then mark-up this copy to reflect all applicable configuration changes. The FAA office of Aviation Systems Standards publishes current version of the airport diagram on their [digital - Airport/Facility Directory \(d -A/FD\)](#) webpage. The markup should provide sufficient detail to permit the FAA cartographer to make applicable revisions. To assist with this effort, we have prepared a [sample airport diagram markup](#) and the resulting revised diagram.

Sponsors may also have their consultant provide a pdf copy of scaled CADD drawing that highlights the changes to airfield pavement configurations and designation.

### Submittal Timeframe

To meet critical publication dates, Sponsors should submit necessary information to the FAA no later than the cutoff date published on the insider cover of the Airport/Facility Directory. This date is typically six weeks prior to the publication date.

## RESOURCES

### Sample Documents

- [Sample Airport Diagram Mark-up](#)

### On-line Information

- [digital – Airport/Facility Directory \(d-A/FD\)](#)