

RNAV (GPS) & Requesting Instrument Approach Procedures

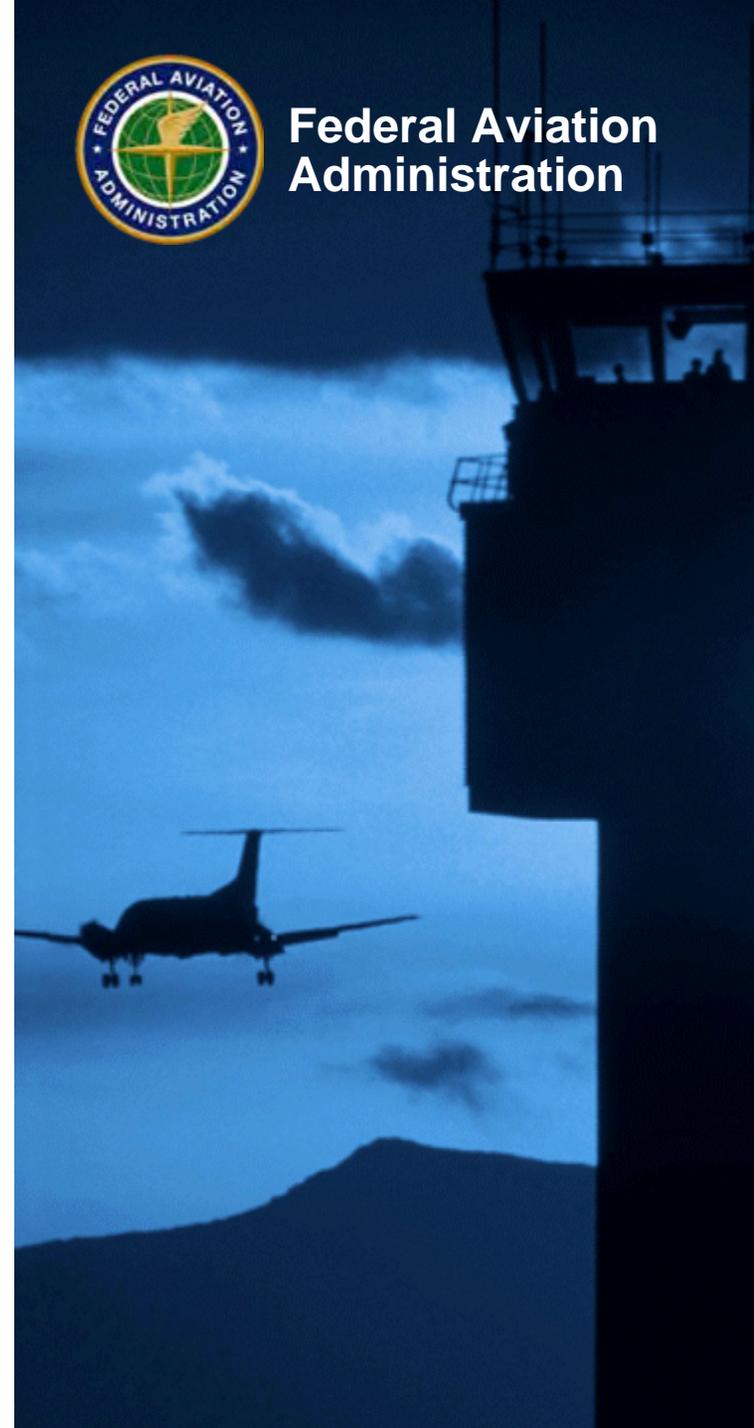
Presented to: Great Lakes Airports Conference

By: Ron Sanders, Central Service Area FPO

Date: November, 7 2008



**Federal Aviation
Administration**



•Central Service Area FPO



•Manager –

Ron Sanders, **817/838-1900**

•Operations Lead –

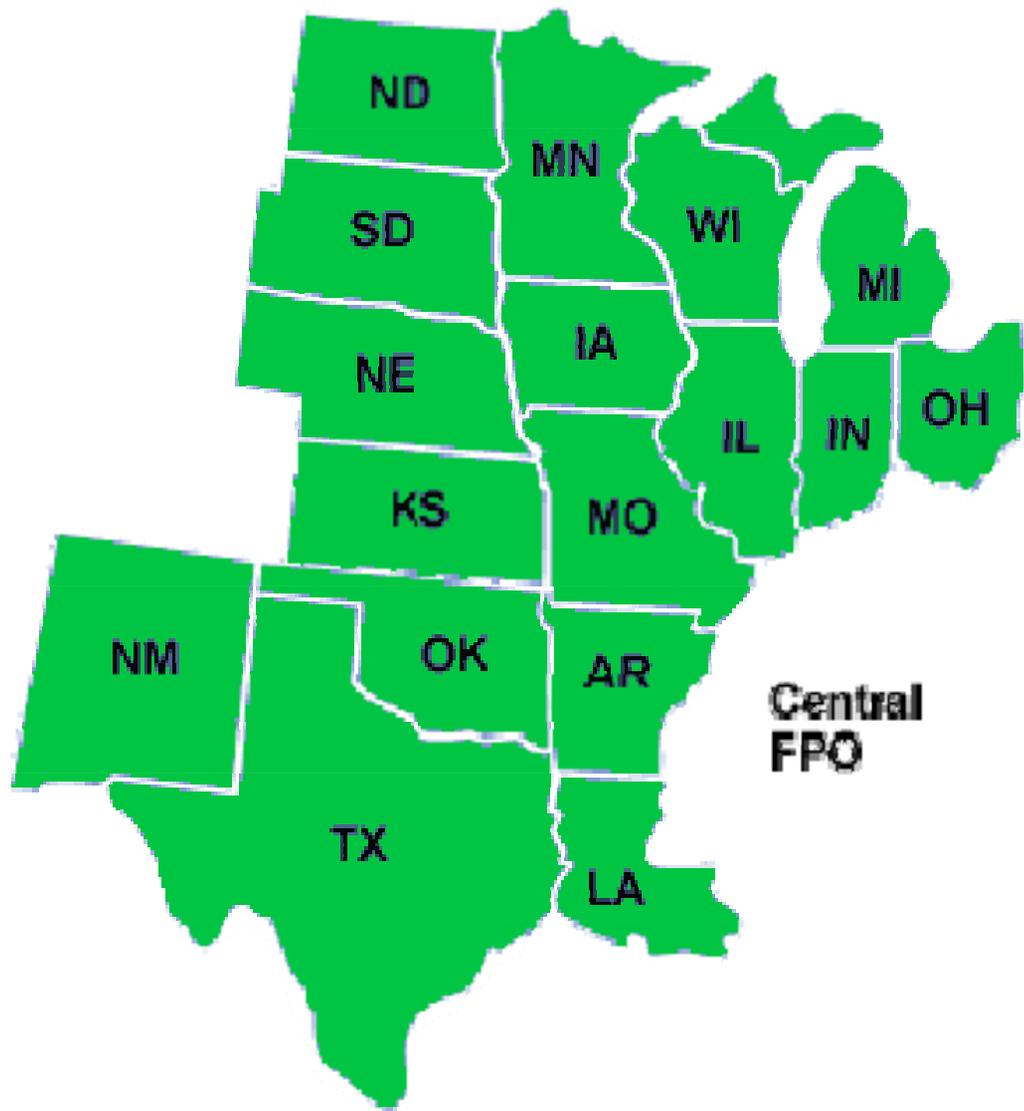
Chris Southerland, **817/838-1901**

•Production Lead –

Lorraine Nugent, **817/838-1912**

CSA FPO STAFFING

- 12 Airspace Evaluation Specialist, (FTE)
- 3 OE/NRA Specialist, (CTR)
- 1 Congressional ILS Specialist, (CTR)
- 2 Administrative Specialist, (CTR)



**Central
FPO**

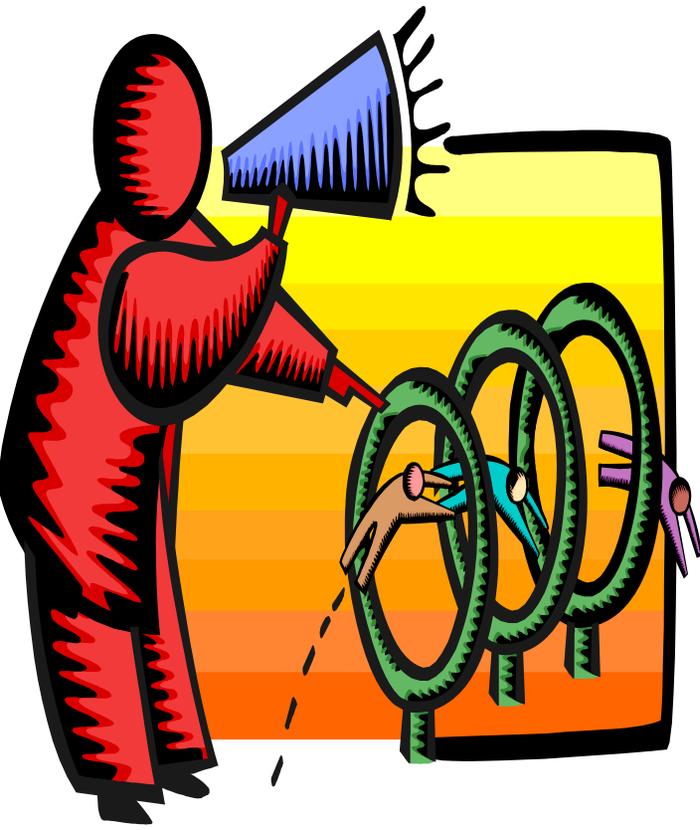
•What do all those people do???



- Coordinate, Process, Develop, and Maintain, over 6800 Instrument Apch Procedures in the 17 CSA states.
- Evaluate & provide response to over 33,000 OE studies for CSA.
- Evaluate & provide responses for over 2500 NRA for CSA.
- Evaluate and provide responses for temporary and long term facility shutdown requests for CSA.

•What do all those people do? (cont)

- Evaluate and provide responses for facility cancel requests for all CSA
- Final Review of all completed procedures to insure that they meets the customer's need and will be published as coordinated with all LOBs



Frequently Asked Questions



- **What is an LPV?**
- **What is required to obtain an LPV?**
- **How do I request the development of an instrument approach for my airport?**
- **Why does the process take so long?**

What is an LPV?



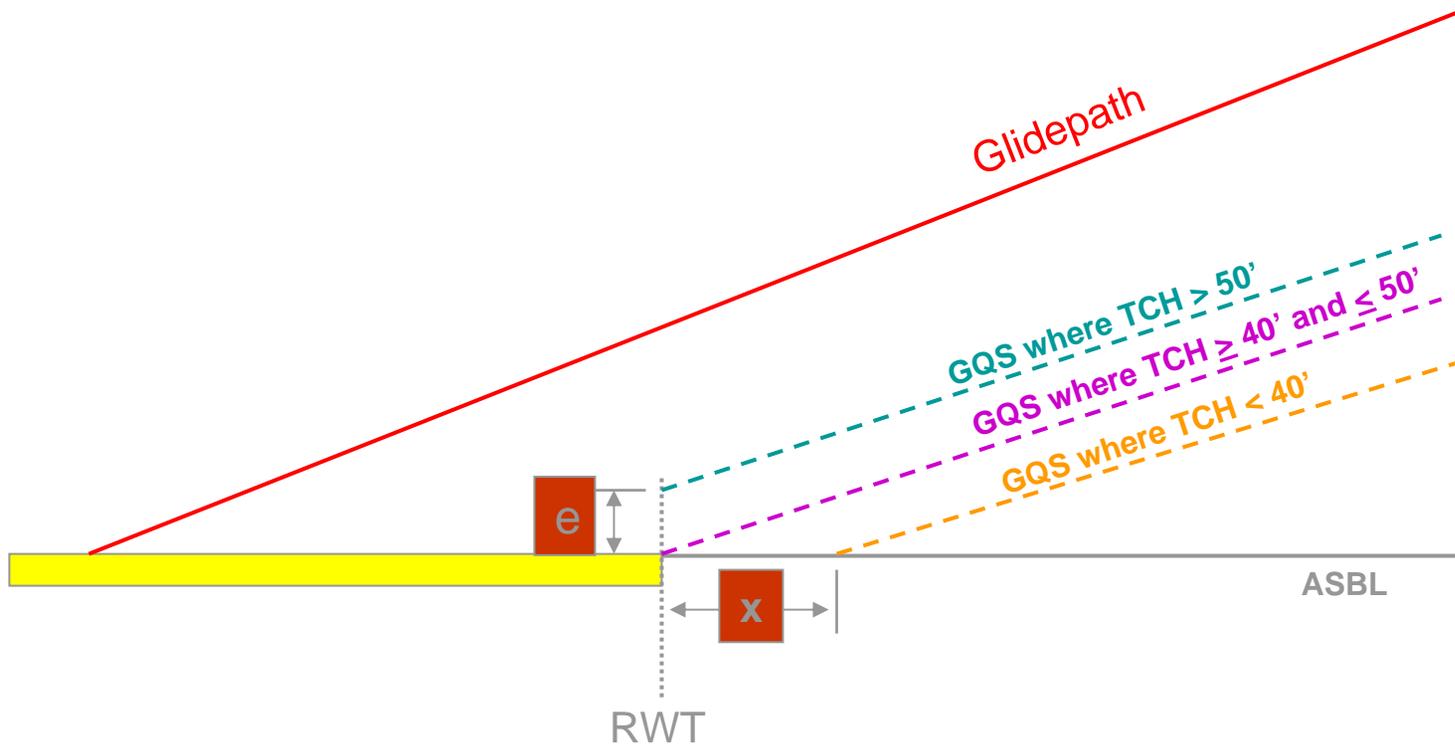
- An LPV is a satellite based **NON PRECISION** Approach w/ vertical guidance.
- An LPV can provide minimums as low as 250' & $\frac{3}{4}$ mi (w/ approach lights).
- An LPV Approach requires a minimum of a D survey.
- An LPV must have a clear GQS.

GLIDEPATH QUALIFICATION SURFACE (GQS)

The GQS extends from the runway threshold along the runway centerline extended to the DA point.

It limits the height of obstructions between DA and runway threshold (RWT).

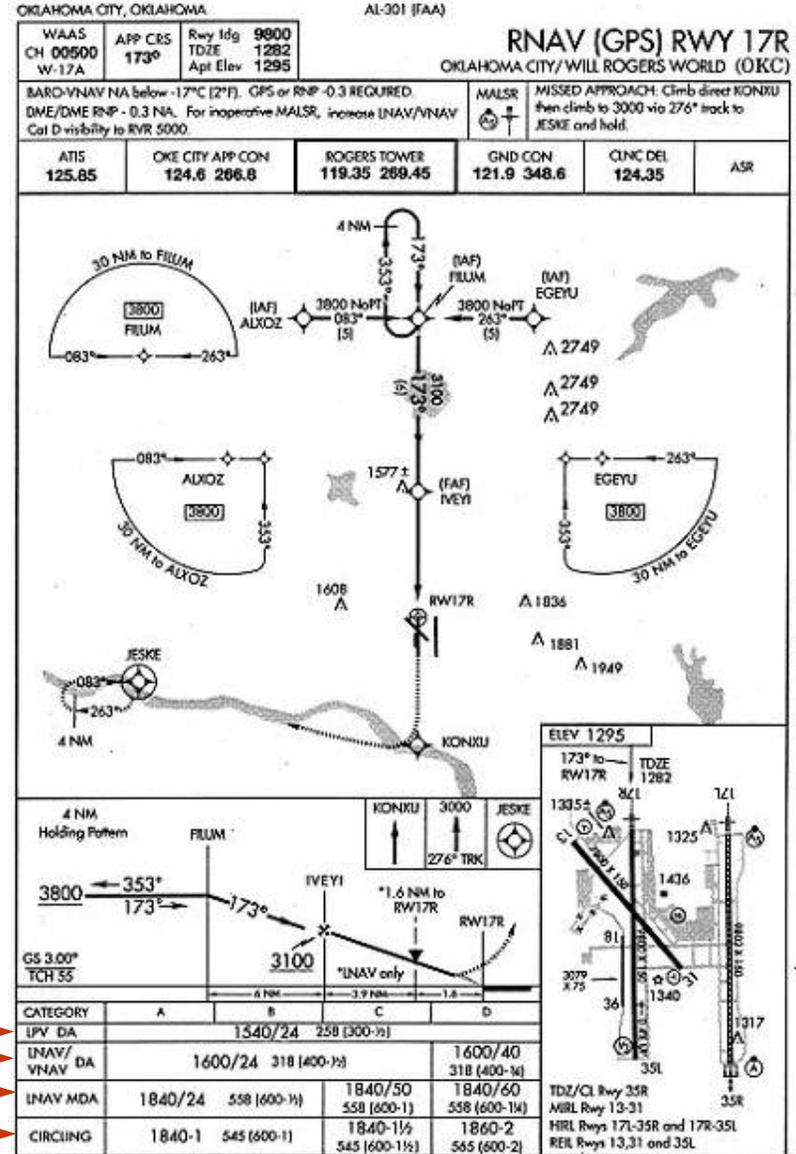
When obstructions exceed the height of the GQS, an approach procedure with positive vertical guidance is not authorized.



SIAP INTEGRATION

Multiple types of approaches published on one approach plate:

- LPV
- LNAV/VNAV
- LNAV
- CIRCLING

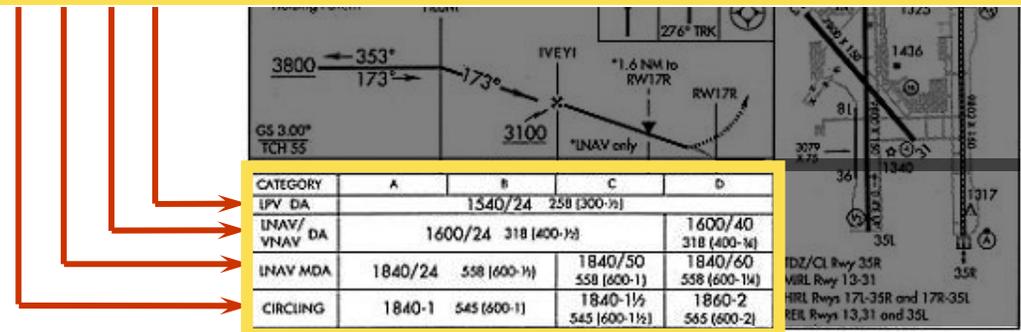


SIAP INTEGRATION

Multiple types of approaches published on one approach

OKLAHOMA CITY, OKLAHOMA				AL-301 (FAA)	
WAAS CH 00500 W-17A	APP CRS 173°	Rwy Idg TDZE Apt Elev	9800 1282 1295	RNAV (GPS) RWY 17R	
BARO-VNAV NA below -17°C (2°F). GPS or RNP -0.3 REQUIRED. DME/DME RNP - 0.3 NA. For inoperative MALSR, increase LNAV/VNAV Cat D visibility to RVR 5000.				MALSR	MISSED APPROACH: Climb direct KONTRU then climb to 3000 via 276° track to JESKE and hold.
ATIS 125.85	OKC CITY APP CON 124.6 266.8	ROGERS TOWER 119.35 269.45	GND CON 121.9 348.6	CLNC DEL 124.35	ASR

CATEGORY	A	B	C	D
LPV DA	1540/24		258 [300-½]	
LNAV/ VNAV DA	1600/24		318 [400-½]	1600/40 318 [400-¾]
LNAV MDA	1840/24	558 [600-½]	1840/50 558 [600-1]	1840/60 558 [600-1¼]
CIRCLING	1840-1	545 [600-1]	1840-1½ 545 [600-1½]	1860-2 565 [600-2]

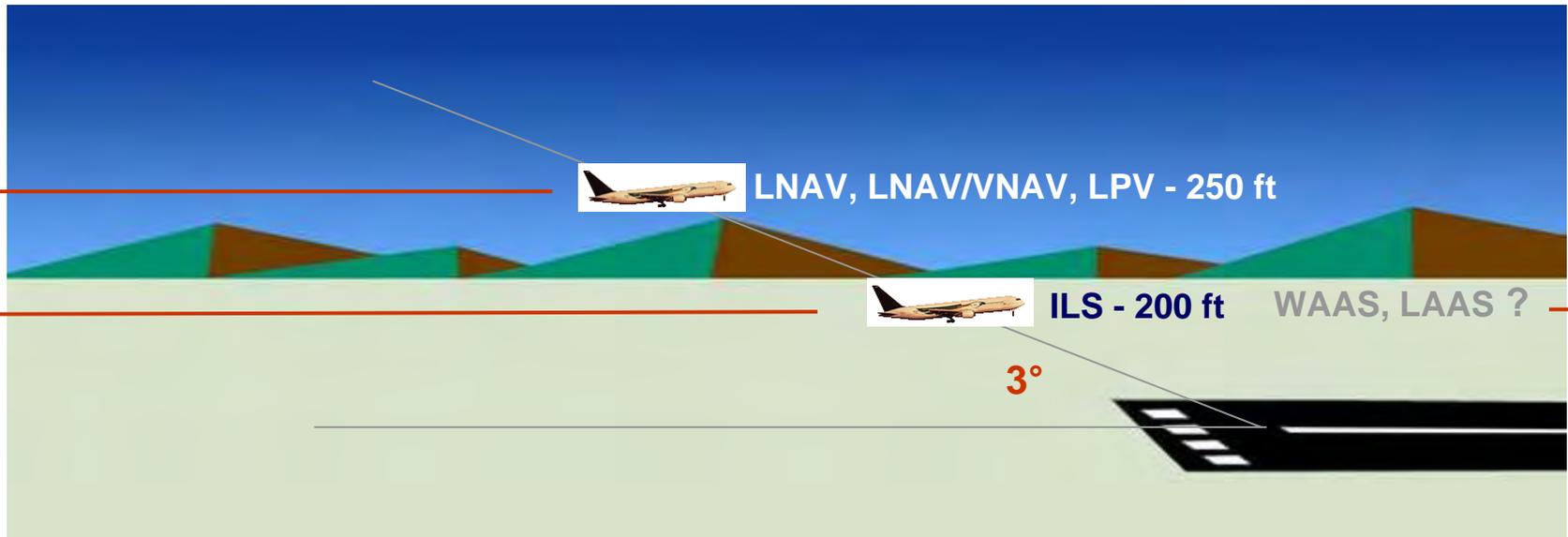


LEVELS OF PERFORMANCE

ILS - Cat I provides minimums as low as 200 ft AGL

Current RNAV procedures provide minimums as low as 250 ft AGL

Future RNAV procedures are intended to provide minimums as low as 200 ft AGL



Wide Area Augmentation System (WAAS)

WAAS consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations, located on either coast, collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The information is compatible with the basic GPS signal structure, which means any WAAS-enabled GPS receiver can read the signal.



Note: WAAS activated July 10, 2003

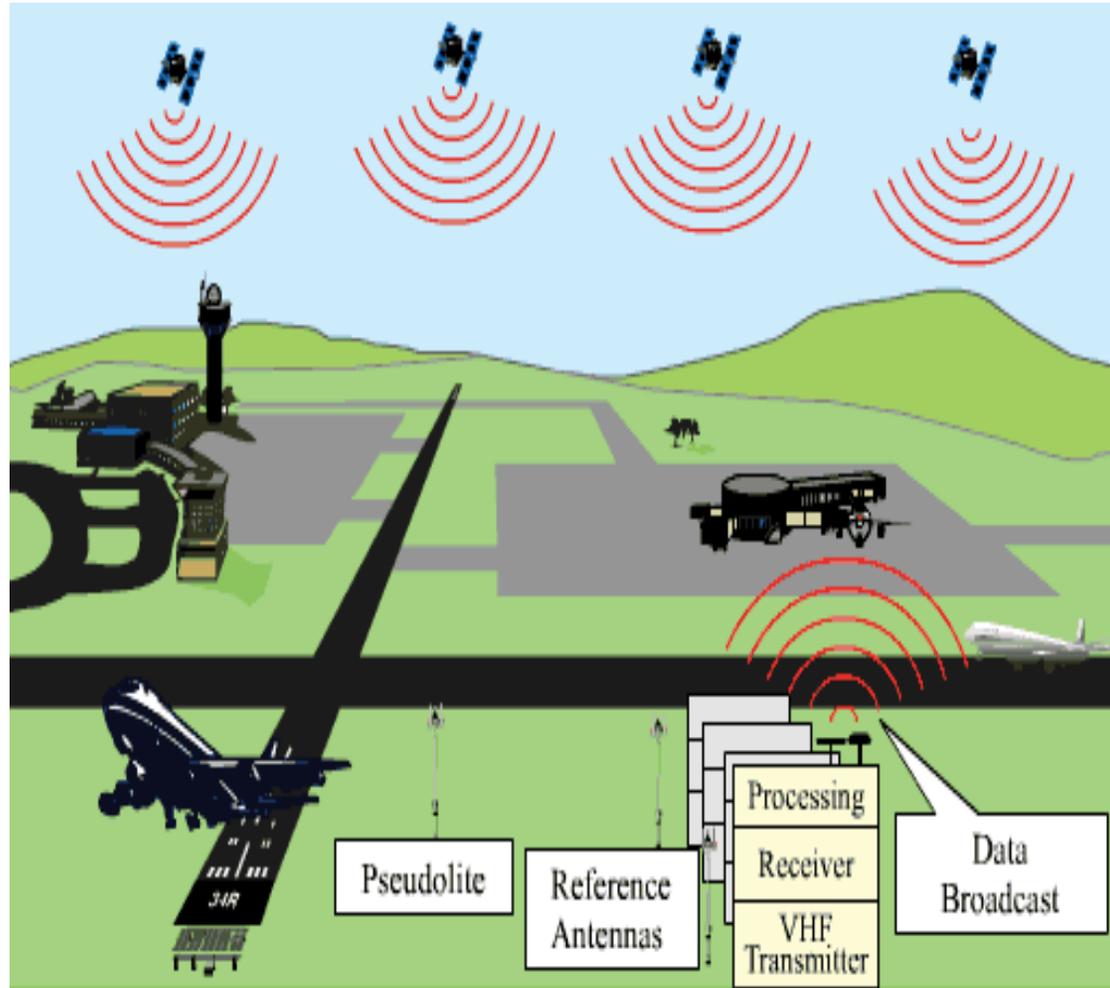
Local Area Augmentation System (LAAS)

LAAS focuses its service on a local area (approximately a 20-30 mile radius), such as an airport, and broadcasts its correction message via a very high frequency (VHF) radio data link from a ground-based transmitter.

One LAAS ground station can provide services to multiple runways, and even multiple airports.

The GPS/LAAS Receiver possesses the DGPS (Differential GPS) positioning accuracy and is able to provide the aircraft with digital output of vertical and lateral deviations while on glide-slope.

The Local Area Augmentation System (LAAS) will augment the Global Positioning System.



Airports with WAAS (LPV) Procedures

**Adding 300 more
each year**



ILS Procedures vs. LPV Procedures

- **As of 7/31/08 Chart Cycle currently 1229 ILS Procedures published.**
- **As of 9/25/08 Chart Cycle currently 1333 LPV Procedures published.**

How do I request an IAP?



- **Requests can be received from anyone. The request must be coordinated with the Airport Manager.**
- **The request can be made via the internet at “avn.faa.gov” or through written request to our office.**

Aviation System Standards

AVN HOME SEARCH SAFETY SERVICES ABOUT US CONTACT US SITE MAP FAQ's LINKS
• Flight Procedures • Aeronautical Charting • Flight Inspection • Maintenance Operations • Washington Flight Program



So you want an Instrument Flight Procedure...

- National Flight Procedures
 - IFP General Information
- IFP Requirements
- IFP Process Flowchart
- IFP FAQ's
- IFP Requests
- Definitions
- FPO Handbook
- Links



This site has been developed to provide information on obtaining an Instrument Flight Procedure (IFP).

An IFP may affect more than just your airport. It may affect neighbors, other airports, or the local air traffic system.

You can start the IFP process by completing a request form or contacting the Flight Procedures Office (FPO). See flowchart and brochure request process.

An IFP for private use will require reimbursement for development costs.

Certain information is required to assist the FAA to support your request:

- General
- Survey
- Airport Data
- Environmental Data
- Funding

Aviation System Standards

AVN HOME SEARCH SAFETY SERVICES ABOUT US CONTACT US SITE MAP FAQ's LINKS
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Instrument Flight Procedure Request Form

- Fill out as many fields as possible
- Required fields are indicated with an * asterisk.
- Submit your request using the appropriate function button at the bottom of this form..

1. Originator information:

*First Name:	ENTER FIRST NAME
*Last Name:	ENTER LAST NAME
Address:	ENTER STREET ADDRESS
City:	ENTER CITY
State:	SELECT STATE
Zip Code:	ENTER ZIP CODE
Country:	US
*Your Daytime Phone:	ENTER PHONE
Fax:	ENTER FAX
*Your E-mail Address:	ENTER EMAIL
Company/Organization:	ENTER YOUR COMPANY OR ORGANIZATION

2. Instrument Flight Procedure (IFP) Information:

*Airport Name:	ENTER AIRPORT NAME
*Airport ICAO Ident:	ICAO ID
City/County:	ENTER IFP CITY
*State:	SELECT STATE
Country:	US
Type Aircraft:	Fixed Wing
Does Airport have a published IFP?	No
Have you contacted the Airport manager regarding this request?	<input checked="" type="radio"/> No <input type="radio"/> Yes
*Additional Remarks:	

Federal Aviation Administration **Aviation System Standards**

- **National Flight Procedures**
- **IFP General Information**
- **IFP Requirements**
- **IFP Process Flowchart**
- **IFP FAQs**
- **IFP Requests**
- **New IFP Request**
- **IFP Request Status**
- **IFP Contact Form**
- **IFP Web Site Survey Form**
- **Definitions**
- **Links**

How We Process the Request?



- **Upon receiving a request the FPO conducts an initial feasibility study to determine specific needs and if the request should go any further, (infrastructure, GQS penetrations, survey requirements, environmental issues, etc)**

How We Process the Request?



- **If the request is feasible and meets requirements, the request is forwarded to the Regional Airspace Procedure Team, (RAPT)**
- **The RAPT approves, disapproves, and establishes a priority for the project.**

RAPT Priorities

- **Priority 1 - Safety, anything to correct a known safety deficiency**
- **Priority 2 - Newly installed or relocated NAVAIDs or airport runway addition/change**
- **Priority 3 - Procedures which test or implement an FAA initiative**
- **Priority 4 - Procedures at airports with no existing IFR approach**
- **Priority 5 - Procedures providing a reduction in minima**
- **Priority 6 - Procedures which eliminate the requirement for a waiver or NOTAM**
- **Priority 7 - Procedures providing flow improvement**
- **Priority 8 - Procedures providing other benefits, new criteria compliance**
- **Priority 9 - Public use procedures not included in 1 through 8**
- **Priority 10 - Special and private procedures not providing benefits of 1 thru 8**

How We Process the Request?



- **Based on this priority a publication date is assigned and the procedure is put into the Procedure Tracking System (PTS)**
 - **This publication date may be over a year out based on priorities of all projects received.**
 - **Progress on your procedure can be tracked and monitored on AVN WEBSITE.**

Other Actions for IAP Development

- **Environmental determinations are made**
 - **This is through an EIS, EA, or an evaluation to determine if the procedure would be “Categorically Excluded”.**
- **Coordination takes place with Airports Division to determine the airport meets standards established in AC 150/5300-13**
 - **The Airport must meet Airport Design criteria**
 - **Obstruction Surveys must be completed**
 - **Weather sources must be determined**
 - **Communications at the airport must be available.**

Other Actions for IAP Development



- **The Air Traffic Division is queried for their desires on design for the procedure.**
 - **Typically we determine what altitude would be good for communication at the IAF and where they desire the missed approach to go.**
- **Once coordination with all FAA LOBs have taken place then the request is forwarded for development.**

How are Minima Established

- **Terminal Instrument Procedures (TERPS) directives provide us the guidance on establishing minima for each type of approach.**
(Reference FAAH 8260.3B & 8260.19C)
- **Typically minima are driven by the obstacle and the lighting environment that you have at your airport.**

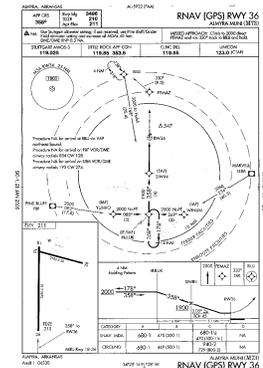
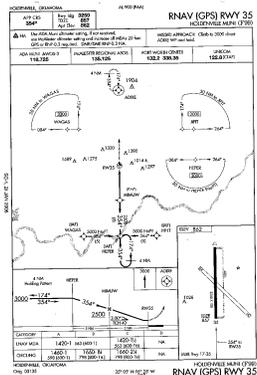
Validation of Minima



- **Validation comes from Flight Check Aircraft.**
 - **Flight checked satisfactorily (SAT) then on to publication.**
 - **Flight checked unsatisfactorily (UNSAT), then changes/ corrections must occur or procedure will not go forward for publication.**

Why does it take so Long?

- The process is well coordinated.
- Safety is major concern and drives some of the necessary delays.
- Your priority versus National Objectives.
- When requesting your procedure, try to justify your case for additional priority consideration.



Questions?

