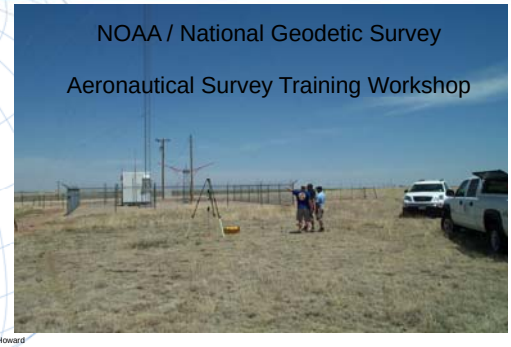
National Geodetic Survey

NOAA / National Geodetic Survey

Aeronautical Survey Training Workshop



Mark Howard
March 30, 2010
Anchorage, AK

National Oceanic and Atmospheric Administration

National Geodetic Survey

Organization

National Oceanic and Atmospheric Administration

- National Ocean Service
  - National Geodetic Survey
    - Aeronautical Survey Program

NGS ASP provides products and services to FAA Aeronautical Information Services (AIS) through a NOAA/FAA inter-agency agreement

National Oceanic and Atmospheric Administration

National Geodetic Survey

National Spatial Reference System (NSRS)

Consistent National Coordinate System

- Latitude
- Longitude
- Height
- Scale
- Gravity
- Orientation

National Oceanic and Atmospheric Administration

National Geodetic Survey

CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS)

1400+ Installed and Operated by various Federal-State-local Agencies

- NOAA/National Geodetic Survey
- NOAA/OAR Global Systems Division
- U.S. Coast Guard - DGPS/NDGPS
- Corps of Engineers - DGPS
- FAA - WAAS/LAAS
- State DOTs
- County and City
- Academia
- Private Companies

National Oceanic and Atmospheric Administration

National Geodetic Survey

http://www.ngs.noaa.gov/OPUS

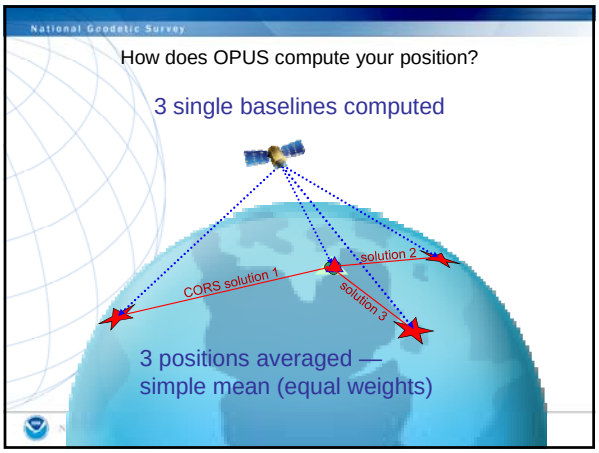
National Oceanic and Atmospheric Administration

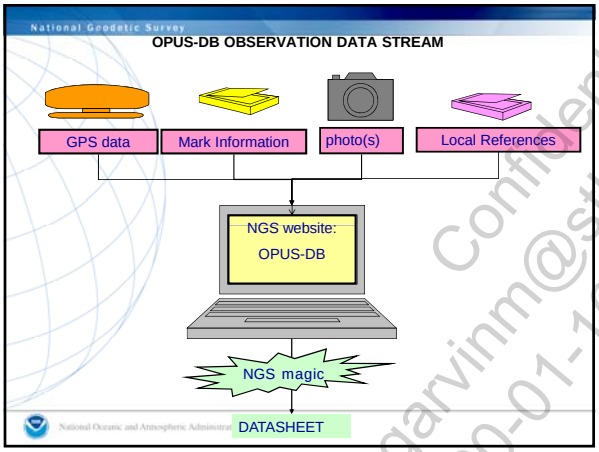
National Geodetic Survey

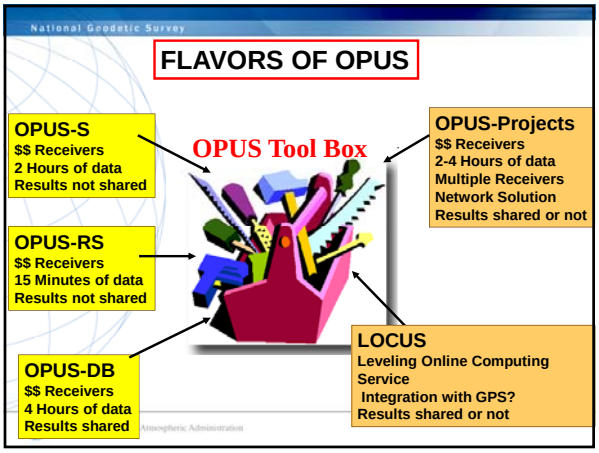
What is OPUS?

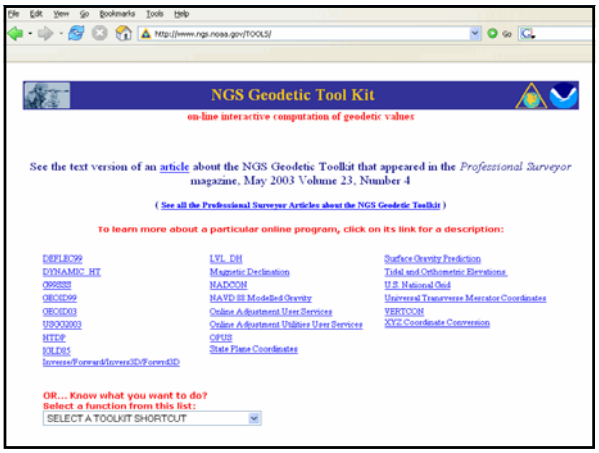
- **On-Line Positioning User Service**
- **Processes GPS data**
- **Global availability (masked)**
- **3 goals:**
  - **Simplicity**
  - **Consistency**
  - **Reliability**

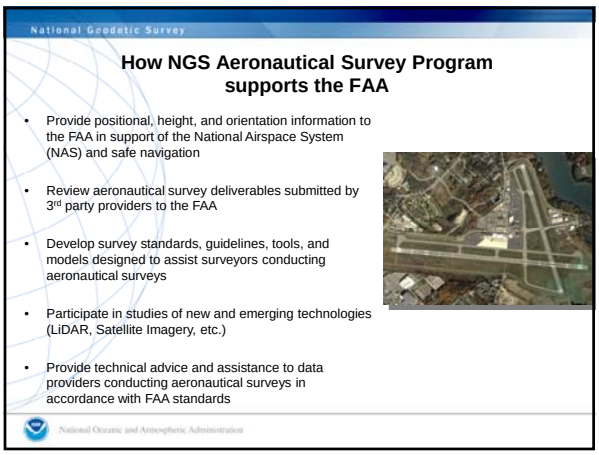
National Oceanic and Atmospheric Administration

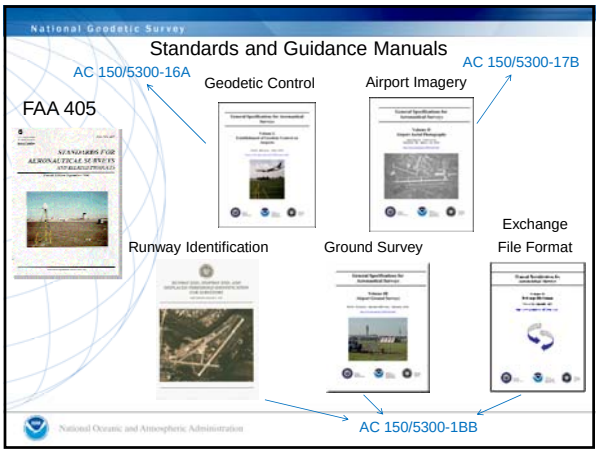


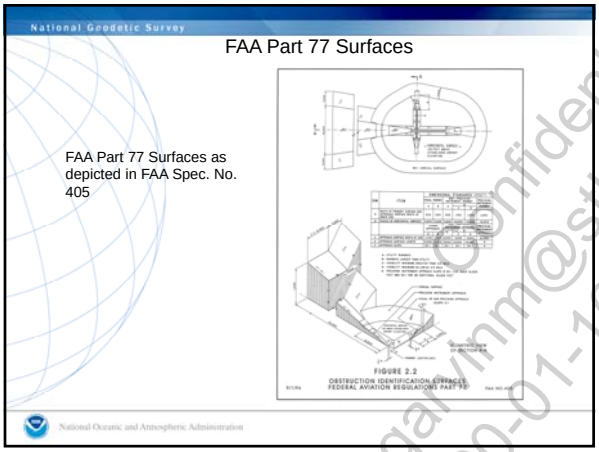


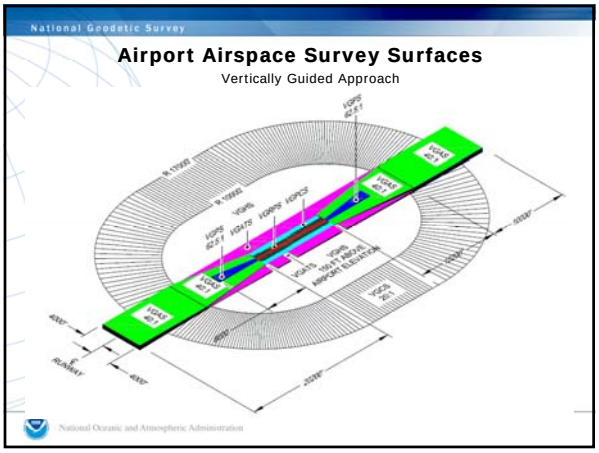


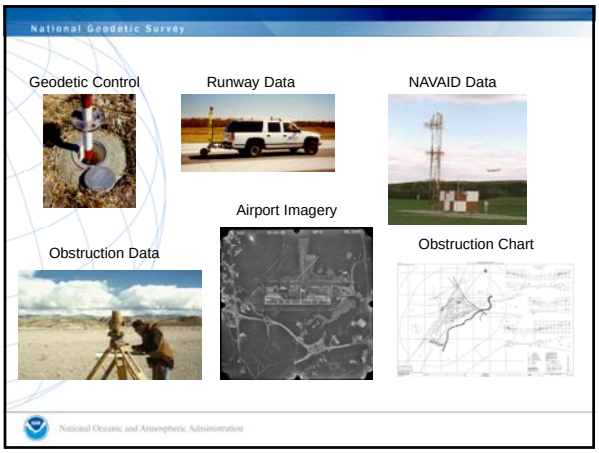


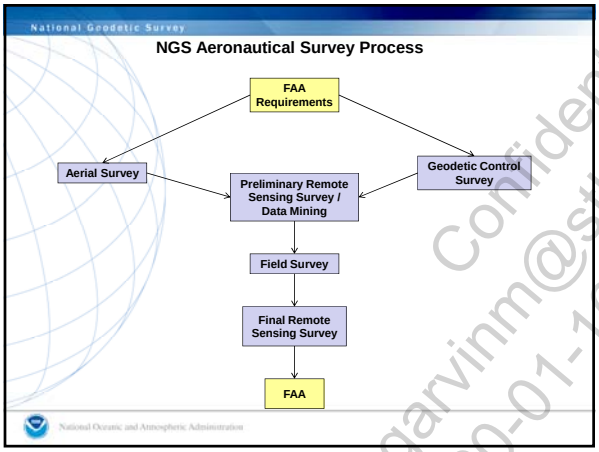


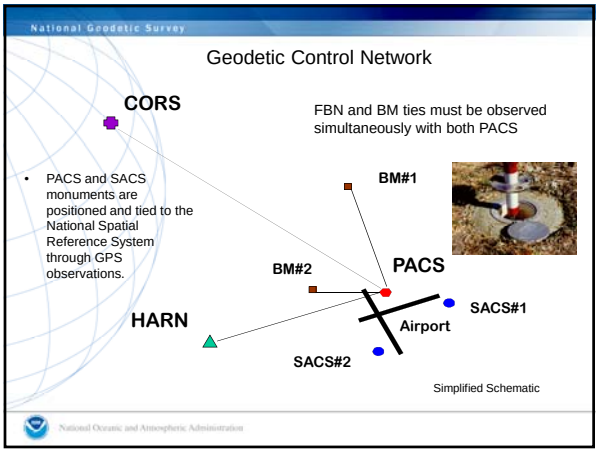






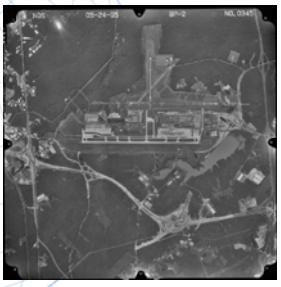






National Geodetic Survey

High-Resolution Imagery



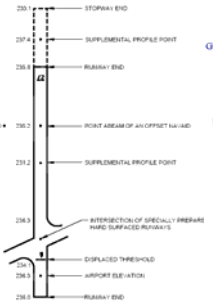
High-Resolution photography of the Airport collected for the entire study area.

Imagery is used in the photogrammetric process for determining the height and position of obstacles and airport planimetric features.

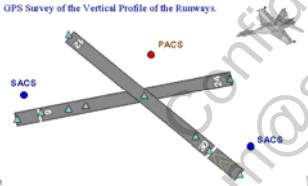
National Oceanic and Atmospheric Administration

National Geodetic Survey

Runway Survey



GPS Survey of the Vertical Profile of the Runways.

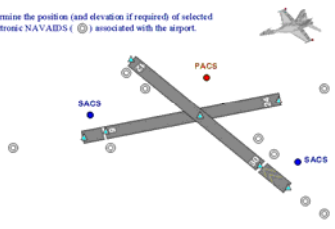


National Oceanic and Atmospheric Administration

National Geodetic Survey

NAVAID Survey

-Determine the position (and elevation if required) of selected electronic NAVAIDS (◎) associated with the airport.

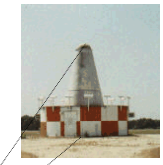


National Oceanic and Atmospheric Administration

National Geodetic Survey

NAVAID Survey

All navigational aids within 10 nautical miles of the airport are tied to the established geodetic control

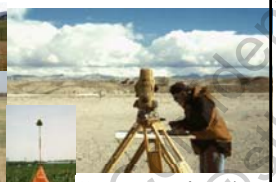



National Oceanic and Atmospheric Administration

National Geodetic Survey

Obstruction Survey








Numerous types of surveying techniques are used to determine the latitude, longitude, and height of obstructions within the FAA specified Obstruction Identification Surfaces

National Oceanic and Atmospheric Administration

National Geodetic Survey

Photogrammetric Survey

All survey information brought together into a Digital Photogrammetric Workstation


National Oceanic and Atmospheric Administration

National Geodetic Survey

Photogrammetric Analysis

National Oceanic and Atmospheric Administration

National Geodetic Survey

SANTA BARBARA MUNICIPAL AIRPORT
SANTA BARBARA, CALIFORNIA

Digital Airport Obstruction Chart

- Geo-spatial file (ESRI shape file format)
- Metadata
- Geo-PDF
- Data in UDDF format

National Oceanic and Atmospheric Administration http://www.ngs.noaa.gov/AERO/eAOC/eAOC.htm

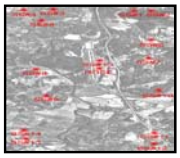
National Geodetic Survey

NGS Quality Review

Review Plans to ensure survey work will result in a successful, acceptable submission satisfying the survey requirements specified in the project SOW.

Geodetic Control

Completeness and accuracy assessment to ensure deliverables meet requirements specified in AC 150/5300-16.



Geo-referenced Imagery

Completeness and accuracy assessment to ensure deliverables satisfy acceptance criteria specified in AC 150/5300-17

National Oceanic and Atmospheric Administration

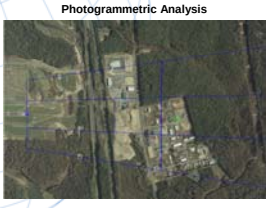
National Geodetic Survey

NGS Quality Review

Aeronautical Data

Completeness and accuracy assessment to ensure deliverables and airport safety critical data meet the standards and specifications in AC 150/5300-18B.

Photogrammetric Analysis



Geodetic Control

Runway

Navigation Aid

Obstacle

Obstruction Identification Surfaces

Required meta-data information

National Oceanic and Atmospheric Administration

National Geodetic Survey

Airport Safety Critical Data

Geodetic Control Stations

Runway Points
Runway End, Displaced Threshold, Stopway End, TDZE, Airport Elevation, Runway Intersection, NAVAID Perp Points, ARP, Runway Profile Points

Runway/Stopway Length and Width
Displaced Threshold Length
Runway True Azimuth

Navigational Aids

Obstacles
Obstructing Areas

Obstruction Identification Surfaces

National Oceanic and Atmospheric Administration

National Geodetic Survey

Summary

- Primary role is to quality review deliverables
- Continue to refine quality review process
- Continue to develop models and tools designed to support surveyors conducting aeronautical surveys.
- Continue to evaluate and research new technologies for increasing efficiency in mapping programs.
- Conduct aeronautical surveys (as requested)

National Oceanic and Atmospheric Administration