Pursuing, Encouraging, and Monitoring Formal Departure and Arrival Procedures

Presentation to:
Noise Compatibility Committee
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Topics

- Airport Authority instruction on next steps
- Standard Instrument Departure (SID) procedure overview
  - Existing Naples SIDs
  - Potential improvements and benefits
- Standard Terminal Arrival Route (STAR) and Instrument Approach Procedure (IAP) overview
  - Existing Naples STARs and IAPs
- Localizer Performance with Vertical guidance (LPV) IAP
  - Existing Naples LPV approaches
  - Potential improvements and benefits
- Major steps to take in pursuing improved procedures
- Ongoing program promotion and monitoring
Airport Authority instruction: Pursue formal departure and arrival procedures

- Pursue Standard Instrument Departures (SIDs)
  - Runway 5: Right turn to 060°
  - Runway 14: Left turn along Davis Boulevard
  - Runway 32: Right turn along “greenway”
  - Runway 23: Right turn along 5th Avenue corridor

- Pursue approach procedures to maintain arrivals at or above published approach angles
  - Follow Precision Approach Path Indicator (PAPI) light guidance
    - 3.5° on Runways 5 and 14
    - 3° on Runways 23 and 32
Let’s talk about departures first…

- **What is a SID?**
  - A preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedure (DP)
  - Designed to expedite traffic flow and reduce ATC / pilot workload

- **SIDs come in several forms, of varying precision**
  - Radar – ATC directs pilots to follow “radar vectors”
  - Non-RNAV – Follow ground-based navigational aids (NAVAIDS)
  - RNAV – For aircraft with “aRea NAVigation” avionics
    - Usually based on global positioning system (GPS) guidance
    - Key element of Next Generation Air Transportation System (NextGen)

- **Naples has two existing SIDs**
  - CSHEL FOUR (RNAV)
  - NAPLES TWO (Radar Vectors)
Existing NAPLES SIDs

Both use radar vectors close to airport
Radar vectors result in significant track dispersion

Existing dispersion is approximately five times that HMMH typically observes for RNAV procedures.
RNAV departure procedures (DPs) should provide much tighter adherence to centers of corridors.

Corridors reflect typically observed full width of RNAV SIDs. Most aircraft would be in center of corridor.
How about landings?

- FAA distinguishes between “arrivals” and “approaches”
- Standard Terminal Arrival Routes (STARs) provide transition from en route structure to fix or waypoint in the terminal area
  - Do not provide close-in guidance
  - Naples has three STARs
    - PIKKR THREE and SHFTY TWO (GPS-based RNAV)
    - ZEILR TWO (non-RNAV)
- Instrument Approach Procedures (IAPs) provide close-in guidance
  - Naples has four published IAPs
    - VOR RWY 05, VOR RWY 23
    - RNAV (GPS) Runway 5, RNAV (GPS) Runway 23
  - The RNAV IAPs are GPS-based “LPV” (Localizer Performance with Vertical guidance) procedures that provide vertical guidance
Naples STAR and IAP examples

PIKKKR THREE RNAV STAR

STAR does not provide close-in guidance

IAP provides close-in horizontal and vertical guidance

RNAV (GPS) RWY 5 IAP
GPS LPV Approaches

- LPV (Localizer Performance with Vertical guidance) provides relatively precise (40m lateral limit) guidance, enables descent to 200-250 feet above the runway.
- LPV approaches can only be flown with a WAAS (Wide Area Augmentation System) receiver. WAAS is an air navigation aid developed by the FAA to enable aircraft to rely on GPS for all phases of flight, including precision approaches.
- LPV approaches are operationally equivalent to a legacy instrument landing system (ILS) but are more economical because no navigation infrastructure has to be installed at the runway.
- There are over 675 LPV approaches in use today and the FAA is publishing 300 new LPV approaches per year.
Existing Naples LPV Approaches

PIKKKR THREE RNAV STAR

RNAV (GPS) RWY 5 IAP
Major steps to pursue SIDs and IAPs

- Pursuing SIDs likely will require multi-step process
  - May require initial non-RNAV guidance leading to RNAV SIDS
    - Voluntary GPS-based procedures
    - Published SIDs using ground-based NAVAIDs
    - Published RNAV SIDS
  - A request from an operator to the FAA for SID development could significantly expedite the process
- LPV approaches to Runways 5 and 23 may have addressed half of IAP goal
  - On-line FAA information indicates Runway 14 and 32 LPV IAPs are in development. Clarification has been requested from FAA.
  - Next step may be to survey operators on aircraft equipment compatibility and request use of procedures.
Ongoing program monitoring and promotion

- Consider flight track monitoring for three purposes
  - Airport monitoring of compliance
  - Pilot and air traffic controller review
  - “Self-investigation” by citizens
- Several vendors offer low-cost web-accessible systems
  - Brüel & Kjær “WebTrack”
  - ITT “WebScene”
  - Passur “Airport Monitor”
- Naples ADS-B should improve tracking accuracy
  - Hardware installed and awaiting commissioning
Example of Airport / Community Web-Tracking Portal: PASSUR “Airport Monitor”

Systems offer a wide variety of capabilities, including potentially:

- Display tracks in near-real-time and replay modes
- Flight identification for aircraft with filed flight plans
- Altitudes for Mode-C equipped aircraft
- Map zooming, panning, etc.
- Complaint entry and investigation
- Noise monitoring data
Questions and Discussion

Thank you for your attention.

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