

# Dispersion in the Age of RNAV



Presented by:

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# What is dispersion?



- ▶ The process of introducing track variability by changing aircraft lateral position enough to spread out repetitive and intrusive noise events experienced by people living under highly concentrated flight paths.





# Why does the FAA like PBN so much!?

- ▶ Safety
  - ▶ Communications Reduction
  - ▶ Pilot/Controller Workload Reduction
  - ▶ Situational Awareness Improvements
- ▶ Efficiency
  - ▶ Point-to-Point Navigation
  - ▶ ELSO - Equivalent Lateral Spacing Operations





# Why systematic dispersion?



- ▶ In our experience, FAA is most likely to entertain systematic dispersion concepts because of safety and efficiency benefits of satellite-based navigation
- ▶ However, systematic dispersion concepts do not always provide the same or as much track variability as natural (or random) dispersion
- ▶ “Once you’ve seen one airport, you’ve seen one airport.”
- ▶ Dispersion vs Concentration - Is concentration always bad?





# What does dispersion look like in the age of RNAV?

## Case Study 1

Equivalent Lateral Spacing Operations (ELSO) at San Diego International  
Airport (SAN)



# ELSO at SAN

- ▶ The San Diego County Regional Airport Authority is conducting a Part 150 study update for SAN. Alternatives recommended by the Part 150 consultant are in draft form. The Airport Authority has not accepted the study yet.
- ▶ ABCx2 was asked by one of the affected communities to provide an alternative flight procedure design that would reduce noise exposure for communities north of the airport and along the ocean while preserving the safety and efficiency of SAN Airport.
- ▶ ABCx2's proposal involved the use of ELSO to provide some track variability while at the same time providing a safe and efficient design for ATC (next slide)
- ▶ ABCx2's proposal reduced the total number of housing units exposed to 65 CNEL by 342 or 572 (depending on the track loading model used). However, since the proposal "shifted" noise and put new housing units inside the 65 CNEL contour, the FAA required unanimous consent of the CAC for acceptance, which it did not receive.



# SAN SIDs Current

Write a description for your map.

Existing Tracks

JETTI

Google Earth

Data SIO, MOAA, U.S. Navy, NGA, GEBCO  
Data USGS  
© 2021 Google  
Data CSUMB SFML, CA OPC

1 mi



# SAN SIDs Part 150

Write a description for your map.

Part 150 Notional Flight Paths Options 1a & 1b

Part 150 Notional Flight Paths Option 1c

Existing Track

JETTI





# SAN SIDs ABCx2

Write a description for your map.

ABCx2 proposal

Keep Existing Track

JETTI



# SAN SIDs All Tracks

Write a description for your map.

## Part 150 Notional Flight Paths

## ABCx2 proposal

## Existing Track

JETTI

Google Earth

Data SIO, MOAA, U.S. Navy, NGA, GEBCO  
Data USGS  
© 2021 Google  
Data CSUMB SFML, CA OPC

1 mi

Navigation icons: speaker, north arrow, and zoom controls.



# Case Study 2

Terminal Arrival Area (TAA) at Ronald Reagan Washington National Airport (DCA)



# TAA at DCA

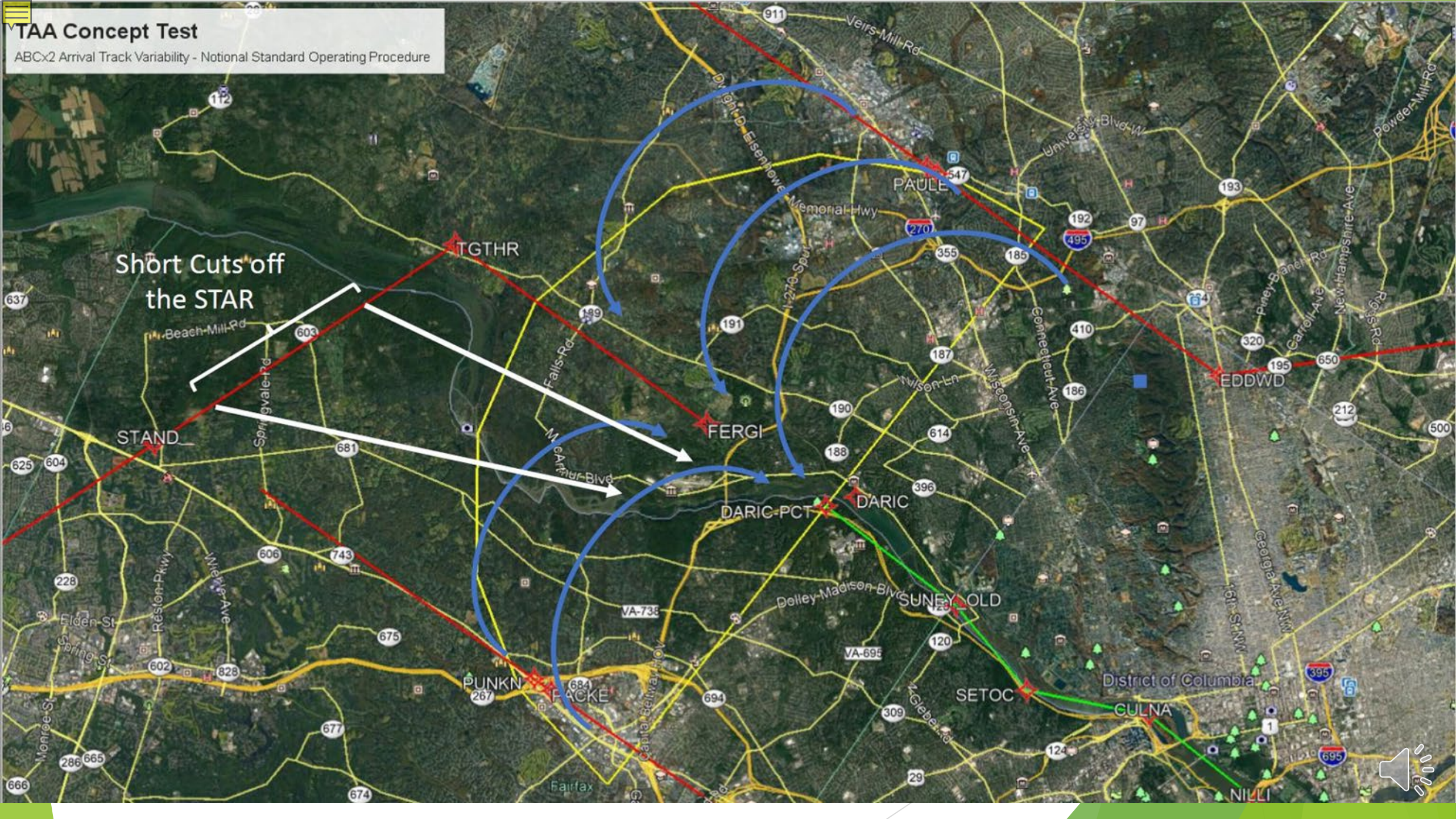


- ▶ ABCx2 was asked to address community impacts associated with PBN arrival procedures to determine if there was a way to introduce some track variability for DCA arrivals to Runway 19
- ▶ ABCx2's proposal involves utilizing the Terminal Arrival Area (TAA) Concept to bypass the FERGI waypoint and initiate an approach to DCA over DARIC waypoint in a more random manner (next slide)
- ▶ Introduction of the TAA concept will mitigate the concentration of noise by allowing ATC to clear aircraft to the DARIC waypoint from multiple directions thereby reducing the number of aircraft on the FERGI transition
- ▶ Residents representing communities from Arlington and Montgomery Counties were directly involved in the procedure design process using the Vianair Airspace Information Modeling (AIM) software
- ▶ Proposal is currently being finalized for submission to the FAA through the Community Working Group (Roundtable).



# MTAA Concept Test

ABCx2 Arrival Track Variability - Notional Standard Operating Procedure



Short Cuts off  
the STAR

STAND

TGTNR

FERGI

DARIC-PCT

DARIC

SUNEY-OLD

SETOC

CULNA

EDDWD

District of Columbia

NILLI





# Conclusions



- ▶ Every airport is different
  - ▶ Location of noise-sensitive communities determine what can and cannot be done.
  - ▶ Operational constraints
    - ▶ Airport Configuration
    - ▶ Terrain & Obstructions
    - ▶ Airspace complexity
    - ▶ ATC Needs/Requirements
    - ▶ Other ...
- ▶ Agreement on a design philosophy is essential to achieve successful outcomes!
- ▶ Every dispersion concept should be designed and evaluated against the priorities (i.e., design philosophy) established.
- ▶ Collaboration between communities and the FAA is vital! (Win-Win)



# Thank You

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