

DCA Aircraft Noise and Mitigation Study

Design Meeting #1 / Kick-Off



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AGENDA

- The People
- The Process
- The Product (Deliverables)
- Procedure Design 101



CONSULTING TEAM – TECHNICAL SMEs*



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*Process and/or Subject Matter Experts Only (Non-Voting Members).

COMMUNITY REPRESENTATIVES – LOCAL SMEs

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Maryland

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Ken Hartman*

District of Columbia

Richard Hines
Ken Buckley

*Process Support / Facilitation Role. (Non-Voting Member).

THE PROCESS – SCHEDULE



MEETING #1

Design Kick-Off / Intro to Flight Procedure Design



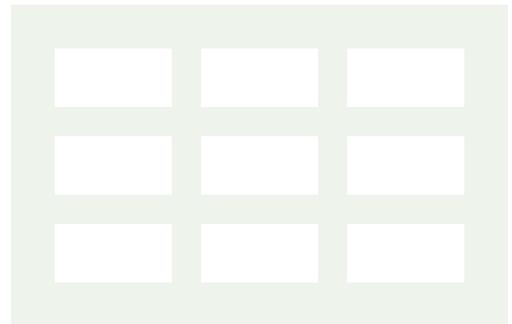
MEETING #2

Design Work



MEETING #3

Design Work (*Continued*)



FAA REVIEW & INPUT



MEETING #4

Edit Design Based on FAA Input



MEETNG #5

Finalize Design



THE PROCESS – PART 2 (REVIEW AND APPROVAL)

North of Airport Working Group

Community Working Group

Formal Submission to Federal Aviation Administration



THE PROCESS – GROUND RULES

✓ Consensus Driven

- Design decisions should be based on the best outcomes for the region.

✓ NOA Design Philosophy

- The NOA Design Philosophy will serve as the basis for the design process.

✓ FAA Criteria

- The design must meet FAA criteria (regulatory design criteria based on applicable FAA Orders).

✓ Likelihood of FAA Acceptance and Implementation

- The consulting team will help guide the process toward a design with the highest

likelihood of FAA acceptance and ultimately, implementation



THE PRODUCT – OBJECTIVES / DELIVERABLES

Notional Designs for North Flow RNAV Departures & South-Flow RNAV Approaches *that are consistent with the NOA design guidelines, meet FAA criteria, and have a high likelihood of acceptance and implementation by FAA.*

- Two baseline north-flow DCA SIDs which can be applied to the other north-flow SIDs at DCA
- A minimum of two DCA RNAV approaches (south flow)

BACKGROUND

HOW DID WE GET HERE?

- Aircraft noise has been an issue for communities surrounding DCA since the 1960s
- Long history of addressing aircraft noise issues
 - One of first airports in the United States to deploy an aircraft noise monitoring system and one of the first airports in the United States to conduct a Part 150 Study
- The Potomac River has been a foundational component of the noise abatement efforts, as requested by the community
 - Developed by MWAA in collaboration with the FAA
 - Resulted in a shift (east) from over Arlington County to the Potomac River
- Increasing daily operations and the DCA Metroplex project have resulted in additional changes which intensified growing community concerns over aircraft noise.

THE INTENDED OUTCOME

- Develop or modify flight procedures in and out of DCA that reduce noise exposure for communities north of the Airport.
- Design of these new or modified procedures shall be based on a set of design principals (Design Philosophy) developed by the NOA with input from the community and the DCA Community Working Group.
- The Design Philosophy is intended to represent procedures that are most “Fair” to the region and community as a whole (applying to those north of DCA only) but must also meet FAA criteria.

DESIGN PRINCIPLES

NoA Guiding Principles for Equitable Flight Procedure Design

Priority

Design procedures over “compatible” areas with the least impact on people, such as uninhabited areas, commercial/industrial areas (such as the George Bush Center for Intelligence (Central Intelligence Agency (CIA) headquarters) and the Naval Surface Warfare Center Carderock Division), portions of the Potomac River, etc. Where noise-sensitive areas such as residential neighborhoods and schools cannot be avoided, endeavor to share the noise burden equitably, as follows,

(Continued on next slide)

DESIGN PRINCIPLES (*Continued*)

Consideration #2

Design procedures that limit the exposure to any one area so that any one community isn't unfairly burdened with an entire region's worth of overflights.

Closer to the runway, where track variability may not be feasible,

Consideration #3

Design procedures that minimize noise exposure to the most impacted communities (for example straight out climbs vs. turning aircraft).

Note: Ambient noise levels and the expectation of quiet should be considered in determining the impact of noise. Such considerations include the nature of an area (urban vs. suburban), the nature of land use (residential, educational, parks/recreational, and medical vs. commercial and governmental), zoning, and building age and type (modern vs. historic). Consistent with minimizing the noise exposure to the most impacted communities,

DESIGN PRINCIPLES (*Continued*)

Consideration #4

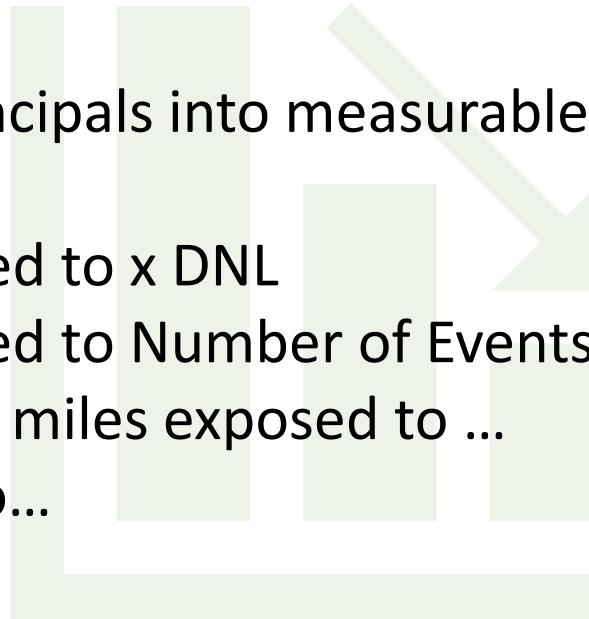
Design procedures to avoid heavily populated residential areas. Where the aforementioned considerations are not operationally feasible,

Consideration #5

Consider historical (pre-2015) flight tracks in recognition of the fact that people purchased their homes based on long standing flight patterns until they were changed by Metroplex flight path changes and other initiatives.

HOW DO WE MEASURE SUCCESS? METRICS

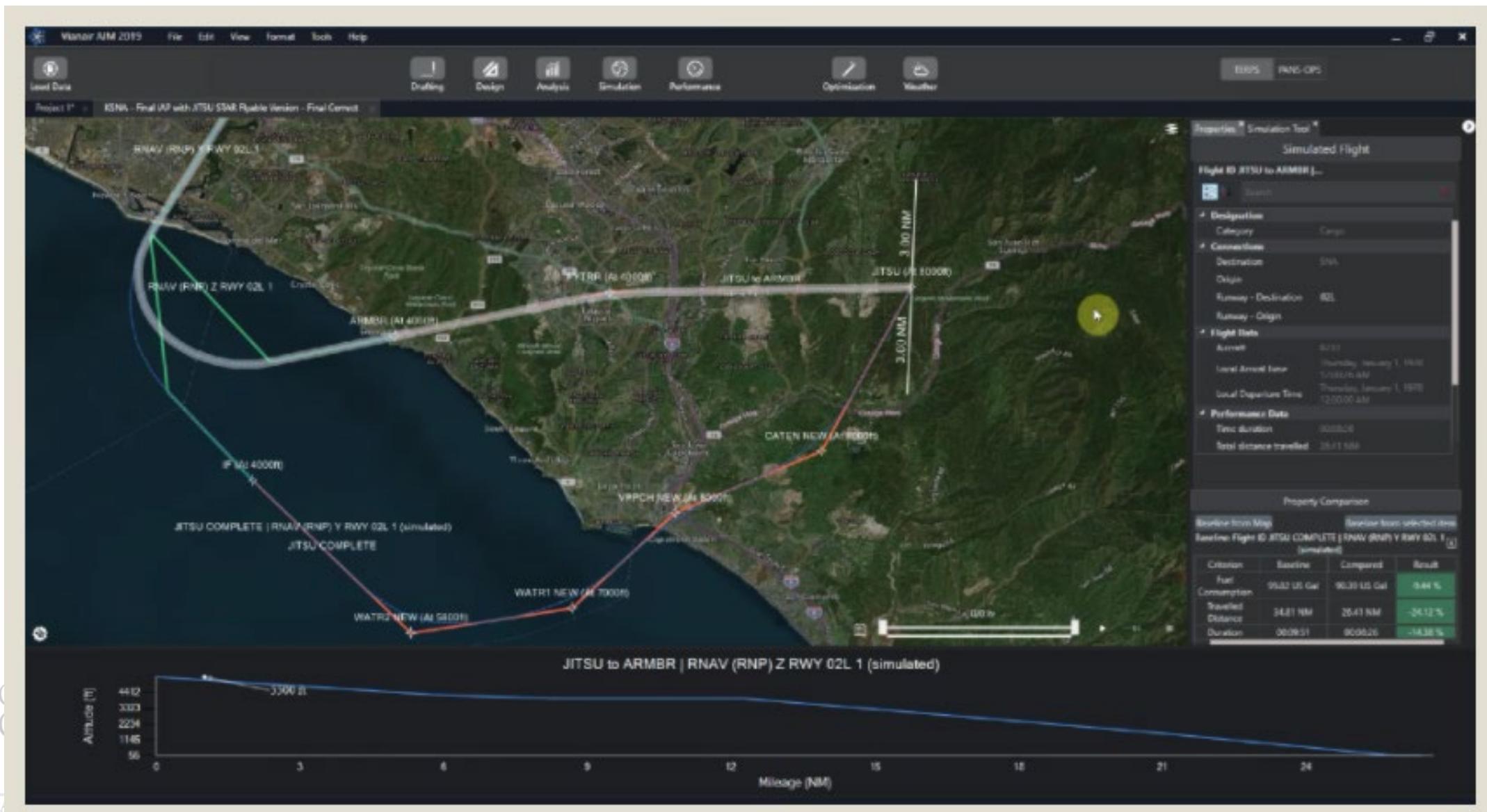
- Metrics will be used when comparing design options
- Convert the NOA Design Principles into measurable outcomes:
 - Total population exposed to x DNL
 - Total population exposed to Number of Events Above x dB
 - Total acreage or square miles exposed to ...
 - Total homes exposed to...



DESIGN 101

1. Although each of you is here to represent your respective communities, please focus on the design of the procedure as a whole.
2. Each community contingent should make a “Top 3 List” of the things that are most important to your community to see changed on the SIDs. (We will do this for the Approaches too.) Your list should always refer back to the design philosophy we have adopted.
3. HOLTB vs A-RNP – FAA will be resistant to change the HOLTB track until after they have had the chance to evaluate its effectiveness and gather data.
4. There is a certain aspect of “trial and error” to procedure design.
5. American Airlines **MAY** be willing to conduct preliminary flight simulation of our notional designs. This would be awesome as it will allow for airline feedback on the flyability of the procedures and will boost FAA’s confidence in the designs if they’ve already been preliminarily tested.
6. Please remember, this is a groundbreaking effort! We are exploring uncharted territory, there are bound to be a few setbacks. If that happens, we will work through them.

PROCEDURE DESIGN DEMO



THANK YOU
FOR YOUR PARTICIPATION!



Design-101:

1. Although each of you is here to represent your respective communities, please focus on the design of the procedure as a whole. Our goal is to achieve consensus on the procedure so that we can confidently recommend the notional designs to the NOA, CWG and ultimately the FAA.
2. For next meeting, each community contingent should make a “Top 3 List” of the things that are most important to your community to see changed on the SIDs. (We will do this for the Approaches too.) Your list should always refer back to the design philosophy we have adopted.
3. HOLTB vs A-RNP – FAA will be resistant to change the HOLTB track until after they have had the chance to evaluate its effectiveness and gather data. We probably will not be successful in suggesting a change to the TF legs before they have tested them. However, I believe that we may have an opportunity to get traction on an A-RNP version of the SIDs that potentially offers an even higher likelihood of aircraft flying the departure in such a way as to miss P-56A.
4. There is a certain aspect of “trial and error” in procedure design. During the design process, if we cannot get something to work within criteria, but the team really wants us to try to make it work, we may take the issue offline and try to tweak the procedure so we don’t waste meeting time trying different alternatives. If we find a solution, we will bring it back to the group and show you what we had to do to make it work.
5. We talked to American Airlines on 11/9/2020. American MAY be willing to do some preliminary Flight Simulation of our notional designs. This would be awesome! It will also make the FAA feel much better if the designs we submit have already been preliminarily tested in flight simulators.
6. Please remember, this is a groundbreaking effort! As far as we know, what we are doing with you has never been done before. Getting this level of cooperation from the airlines and the FAA for a community group is unprecedented. Please understand that everyone is a bit wary of what we are doing, and they may react tentatively to some of our requests. We (ABCx2 and the NowGEN® Team) are working hard to gain the trust of the industry for this type of community engagement. However, since we are exploring uncharted territory, there are bound to be a few setbacks. If that happens, we will work through them. It just takes time for people to become comfortable with something new, especially something as “radical” as actually involving the community in procedure design.