Keynote

Airspace Modernisation and Sustainability - A View From the UK

Presented By: *Ian Jopson, NATS*

Airspace modernisation has been widely trailed as giving access to more capacity, improved safety, and avoidance of future delay. In some cases less is said by the industry about the potential to reduce the environmental impact of the sector through modernisation of airspace and the deployment of performance based navigation technologies. In this speech Ian will give a view of the crucial part airspace modernisation in the UK needs to play in the sustainable growth of the sector and how stakeholder engagement plays an important part of that. With a new UK Government Aviation Strategy in the pipeline this is an exciting time for aviation to show it can grow sustainably - in the broadest sense. Ian will explore how the industry is collaborating to bring that future to life.

Keynote

Cecil Spaceport's Horizontal Launch Operations by Reusable Launch Vehicles

Presented By: *Todd Linder, Cecil Spaceport, Jacksonville Aviation Authority*

In 2010 the Jacksonville Aviation Authority was issued a Launch Site Operators License (LSOL) to conduct Horizontal Launch Operations by Reusable Launch Vehicles (RLV). Currently, we work with two different launch providers and are anticipating our first “Commercial” Launch later in 2019.

PBN: What is it and why is it necessary?

PBN - The Science and Application to High Density Terminal Arrivals

Presented By: *William Johnson, Langley Research Center, NASA*

Performance Based Navigation (PBN) can enable key benefits in Capacity and Efficiency for the National Airspace System. An overview of the science and potential benefits of PBN will be presented with a brief look at the application of the science to high density terminal arrival operations.

PBN: What is it and why is it necessary?

PBN Past and Future

Presented By: *Joseph Post, Federal Aviation Administration*

Performance Based Navigation can improve the safety, efficiency, and predictability of flight operations. Mr. Post will review past applications of PBN procedures in the National Airspace System from these perspectives, and describe new concepts that use Required Navigational Performance (RNP) to reduce separation minima in terminal airspace.

PBN: What is it and why is it necessary?

Why does New York need PBN

Presented By: *Ralph Tamburro, Aviation, Port Authroity of NY/NJ*

review of the current procedural recommendations and how they will impact the surrounding communities

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Possibilities Within the Framework

Development of Approach and Departure Procedure Modifications to Reduce Community Noise

Presented By: *John Hansman, MIT*

This briefing will present the current status of efforts to identify and implement RNAV procedure modifications which have the potential to reduce community noise exposure at Boston Logan Airport (BOS). Examples of procedure modifications considered include: horizontal track modifications, vertical flight profile modifications and techniques to introduce track dispersion. Target procedure changes were identified through comparison of pre and post RNAV flight tracks as well as community stakeholder input. Techniques to model and communicate the community noise impact of potential changes were developed based on number of events above a reference noise (Lmax) threshold. Operational feasibility of proposed procedure modifications were evaluated through operational stakeholder input and FAA procedure design processes.

Possibilities Within the Framework

Heathrow Airport Airspace and Future Operations Consultation

Presented By: *Kevin Walton, Heathrow*

This presentation covers Heathrow Airport's current Airspace and Future Operations Consultation that seeks feedback on our design envelopes for airspace change and options for how we use our runways in the future.

Possibilities Within the Framework

FAA efforts to understand and address aviation noise challenges

Presented By: *Kevin Welsh, FAA, Office of Environment and Energy*

Real World Results

Using PBN as Noise Mitigation

Presented By: *Jonathan Bagg, NAV CANADA*

Discussion of examples from airports, particularly Calgary where we a new standard for parallel operations was implemented that incorporates more continuous descent and reduces overflight of residential areas and emissions.

Real World Results

Using PBN as Noise Mitigation

Presented By: *Blake Cushnie, NAV CANADA*

Discussion of examples from airports, particularly Calgary where we a new standard for parallel operations was implemented that incorporates more continuous descent and reduces overflight of residential areas and emissions.

Real World Results

Denver – A PBN Success Story

Presented By: *Mike Mckee, Denver International Airport*

Beginning in 2012, the FAA implemented a full suite of RNAV and RNP arrival and departure procedures in Denver. These procedures have been highly successful, both with respect to increased operational efficiency and noise compatibility with surrounding communities. Key to this success was early and broad collaboration with all affected stakeholders.

Real World Results

Cost-effectiveness of the year-round use of the 'TNNIS Climb' in Queens, NY, USA.

Presented By: *Brian Will, Queens Quiet Skies*

In recent years, airports in the US have been transitioning to automated flight systems. In 2012, this transition has led to the year-round use of 'TNNIS Climb' at the LaGuardia Airport, the use of which had been limited to the US Open Tennis tournament prior to 2012. The year-round use of TNNIS have created a loud consistent noise for the residents of the overflown communities, which is linked to health threats such as an increase in the rate of anxiety or cardiovascular conditions based upon previous published studies. In this study, we will develop a mathematical decision-analytic model and quantify the health and economic consequences of the year-round use of TNNIS in Queens, NY.

Real World Results

Cost-effectiveness of the year-round use of the 'TNNIS Climb' in Queens, NY, USA

Presented By: *Zafar Zafari, Pharmaceutical Health Services Research, University of Maryland*

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Legislative Update

Perspectives of legilsative changes by NOISE

Emily will provide an overview of what is going on in Washington with budget, appropriations and policy. She will discuss noise provisions that were included in the FAA bill and other pending policy initiatives related to our issues in the 116th Congress

Presented By: *Emily Tranter, NOISE*

Emissions

An Integrated Measurement and Modeling Study of UFP due to Aircraft Operations at Boston Logan

Presented By: *Sarav Arunachalam, University of North Carolina at Chapel Hill*

Recent studies have shown elevated levels of ultrafine particles near several airports in and outside the U.S. This presentation will present results from an ongoing measurement and modeling study at Boston Logan international airport. The ambient monitoring campaign focused on measuring UFP as Particle Number Concentrations (PNC) at multiple sites with varying proximity to the airport, as well as arrival flight paths, to determine the locations and atmospheric and flight activity conditions under which PNC exposures could be elevated. The modeling study involved using multiscale approaches from regional to local scales including detailed puff-based physics to model the evolution of the plume from aircraft LTO operations at Boston Logan. We present an initial look at results from this ongoing study which offers novel insights regarding the magnitudes of aircraft arrival vs. departure contributions relative to the background PNCs from the measured and modeled approaches. The presentation will conclude with a discussion on potential extensions to validate/refine both approaches for an integrated assessment of the airport contribution to ambient UFP.

Emissions

AEDT Development Goals

Presented By: *Joe DiPardo, Noise Division of the FAA Office of Environment and Energy*

AEDT is a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality consequences. AEDT is the comprehensive tool that officially replaces the Integrated Noise Model (INM – single airport noise analysis), the Emissions and Dispersion Modeling System (EDMS – single airport emissions analysis), and AEDT 2a (regional noise analysis). The software streamlines the modeling of aviation's

environmental consequences and allows the assessment of their interdependences. Its ability to address studies ranging in scope from a single flight at an airport to scenarios at the regional, national, and global levels supports the needs of both compliance assessment and advanced research. The software is based on the latest accepted modeling methodologies and its infrastructure based on geographic information system (GIS) and relational database technologies provides unprecedented presentation, integration, and scalability opportunities. This presentation will discuss the accuracy of AEDT noise modeling and the plans for future improvements to AEDT aircraft performance, noise and emissions modeling.

Emissions

Developing a Roadmap to Achieve Zero Emissions at Airports

Presented By: *Cian Fields, Sustainable Transportation Practice, Cadmus*

Cian will discuss his work with the Airport Cooperative Research Program (ACRP), where his team is conducting research on zero emissions planning at airports. This research will inform development of a methodology to help airports develop their own roadmap, and will be accompanied by a guidebook offering helpful background information, context, and resources to assist in decision making along the way.

Emissions

ACRP 02-80 - Quantifying Emissions Reductions at Airports from the Use of Alternative Jet Fuels

Presented By: *Philip Soucacos, Booz Allen Hamilton*

ACRP 02-80 project to develop a method to help airport industry practitioners estimate potential PM2.5, NOx, SOx, and HAP emissions reductions by the use of ASTM-certified alternative jet fuels. To promote the use of this methodology, this projects also includes the creation of an easy to use tool for airport employees who are not necessarily environmental or air quality specialists or scientists, and a fact sheet for other interested airport and aviation stakeholders.

A State of the Industry Report, a reference document that captures the current status of knowledge regarding emissions from the use of SAJF has been published under this project. The report includes a review of the scientific and research literature findings regarding changes to aircraft emissions as the result of the use of SAJF compared to conventional jet fuel. It includes an analysis of gaps in the current understanding of the production of pollutants from SAJF and identifies steps necessary to address those gaps.

ACRP 02-80 Home Page:
http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4238

High Tech Noise & Emissions Control

Quieter Airplanes and Flight Operations – A Boeing Perspective

Presented By: *Terry Christenson, The Boeing Company, Flight Sciences - Noise, Vibrations & Emissions*

An overview of the technologies Boeing is applying or considering for present and future aircraft will be presented.

High Tech Noise & Emissions Control

Addressing Aviation Environmental Challenges through Technology and Fuels

Presented By: *Jim Hileman, FAA*

Dr. Hileman will present on R&D efforts of the FAA to reduce noise, fuel use, and emissions. This will include information on the FAA Continuous Lower Energy Emissions and Noise (CLEEN) Program to accelerate the maturation of new aircraft and engine technologies as well as efforts to advance the development and deployment of sustainable aviation fuels.

High Tech Noise & Emissions Control

Passenger Air Vehicle Noise Requirements

Presented By: *Yahia Ismail, Physics, Aurora Flight Sciences*

Recently Aurora Flight Sciences successfully completed first flight of its Passenger Air Vehicles (PAV) at a test site in Manassas, VA. The noise requirements and targets for airplane certifications still need to be defined. Several noise metrics have been used in the past for other air transport categories, such as EPNL and SEL. The design aims for the vehicle to be quieter in that airplane category. The purpose of the presentation is to go over current noise regulations for similar vehicle types and to raise a few questions about what would be an appropriate noise metric for the new vehicle category.

General Aviation

Noise and Vibration Engineering Embraer: Advancements in Aircraft Technologies

Presented By: *Micael Gianini Valle do Carmo, Chief Engineering Office, Embraer*

General Aviation

Airport Successfully Demonstrating the Commitment to Being a Good Neighbor

Presented By: *Diane Jackson, Naples Airport*

We will supply a brief history of the Naples airport, highlight some of the community services that we provide such as EMS and public services then move into our Noise Compatibility Committee and our goals through our Strategic Plan.

Noise Issues on the Horizon

Noise and climate impacts of emerging commercial supersonic aircraft

Presented By: *Dan Rutherford, International Council on Clean Transportation*

This presentation will summarize recent research on the potential noise (LTO and en route), air quality, and climate impacts of emerging commercial supersonic aircraft. Both aircraft and fleet level analysis will be discussed. The implications of these findings for US domestic and international standard setting, and also for the aviation industry's longer-term environmental goals, will be provided.

Noise Issues on the Horizon

UAS regulations/policy

Presented By: *Justin Towles, Ascension Global*

Noise Issues on the Horizon

Addressing Environmental Concerns of New Entrants

Presented By: *Kevin Welsh, FAA*
