DCA AIRPLANE NOISE ASSESSMENT PROJECT

FREYTAG & ASSOCIATES LLC
ACOUSTICAL CONSULTANTS

DEPARTMENT OF ENERGY & ENVIRONMENT
PROJECT OBJECTIVES

• Investigate noise impacts from DCA air traffic operations
• Thoroughly review existing data, supplemented by new investigations, to document the past and current airplane noise environment over the District
• Identify operational changes to minimize noise
• Review current noise abatement procedures
• Assist FAA in NextGen implementation while minimizing noise
• Develop revised air traffic procedures, acceptable to the FAA, to minimize the current noise impact on the District
NEXTGEN

• A new national airspace system transforming America’s air traffic control system from a ground-based navigation/radar system with radio communication, to a satellite-based (GPS) system
• Implementation across the U.S. from 2012 to 2025
• Advantages:
  • shorter routes (more direct)
  • saves time and fuel
  • reduces traffic delays
  • increases capacity
  • minimizes voice communication
  • greater safety
  • reduces controller and cockpit work load
• Disadvantage: New air traffic control routes were established over noise-sensitive areas.
PROJECT ACTIVITIES:
EXISTING DATA ASSESSMENT

• Noise complaints – historical review
• Published air routes – review and assess
• DCA noise monitoring records – review and assess
• Noise monitoring in the community
PROJECT ACTIVITIES:
PREDICTION AND RECOMMENDATIONS

• Sleep interference study
• Classroom disruption study
• Recommend new air traffic control routes and procedures
• Computer noise modeling – past and proposed
• Final report – written and presentation
AIR TRAFFIC CONTROL PROCEDURES
APPROACH AND DEPARTURE

SERFR STAR - OPTION 1
SAMPLE AIR TRAFFIC CONTROL APPROACH
WASHINGTON, DC METROPLEX

Pre

Post
BOOCK TWO
RNAV SID:
INITIAL TRACK
(RWY 01)
BOOCK TWO RNAV SID
NORTH – EAST TRACK
(ALTITUDES TARGETS CLIMB RATE)
NOISE EXPOSURE CONTOUR (DNL)

- FAA AEDT Noise Model
- Actual flight tracks (in red)
- Models actual aircraft type, altitudes, operation time
OPTIONS FOR REDUCING NOISE EXPOSURE TO DC COMMUNITIES

• Arrival and/or departure route (altitude) modification
• Arrivals: Optimized Profile Descent (OPD)
• Arrival traffic management: In-trail sequencing – inbound flights
• New and more precise Area Navigation (RNAV) procedures
• Amend descent profiles fix to fix
• Reduce track miles and amend track speed
• Minimize delayed vectoring
COMMUNITY INPUT

• Record major noise events
  ✓ Date, time, location, direction, aircraft

• Noise monitoring at three locations
  ✓ Greater noise impact, diverse communities, quiet locations

• Nighttime noise monitoring in three homes
  ✓ Noise impact, diverse locations, quiet interior (no occupants)

• Noise monitoring at two schools (school day)
  ✓ Noise impact, diverse locations, no occupants
Palo Alto Results

- Identified new air traffic control procedures to minimize noise
- Showed noise exposure increases with NextGen
- Documented all results
- Community presentation
- Submitted to the FAA for review – Select Committee from local communities
CONCLUSIONS

• Assessments:
  – Published routes
  – Actual procedures
  – Old and new noise monitoring data
  – Noise modeling of existing and recommended procedures

• Recommendations
  – Viable changes in ATC procedures to minimize noise throughout the District
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POTENTIAL MEASUREMENT LOCATIONS
Penetration Gate Plot for Gate SunnyvaleZORSA
1/1/2016 7:24:08 AM - 10/3/2016 11:59:23 PM
4998 Tracks Crossed Gate: Left = 389 (7.78%), Right = 4609 (92.22%)
FICON 1992 Re-Affirmation of Schultz Curve

FICON (1992) re-affirmation of Schultz (1978) and DNL was the last in-depth review for the FAA.