SDF CDAs
Lessons Learned
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UPS Advanced Flight Systems
December 5, 2007
Agenda

- Background
- Schedule
- The “T-Bone”
- The “Bait Ball”
- Solutions
- Environmental Challenge
SDF CDAs From the West
Schedule

- Start: 6 Aug 2007
  - SDF/ZID/ZKC/UPS Letter of Agreement
  - Crew “Must Read Bulletin”
  - Dispatcher and Gateway Coordination
  - 2:00 PM Telecon
Schedule

- On Hold: 20 Sep 2007
- 180-day CatEx on hold
SDF CDA 35L/R

VERTICAL NAVIGATION PLANNING INFORMATION
M & S tail aircraft will follow AGD command speeds until FAF. All aircraft must be at 170 Kts or less at FAF.

B757/767/787-400:
Arrival must be flown using FMS LNAV and VNAV guidance.

A300:
Use the appropriate vertical mode for compliance with altitude/airspeed constraints.

1. NON-FMS AIRCRAFT:
Only required to meet altitude/airspeed restrictions at BGEST BRRWN, and FAF.

ARRIVAL
BGEST ONE - Expect ILS 35L
BRRWN ONE - Expect ILS 35R

CDA NORTH ARRIVALS
BIG EAST ONE (BGEST1)
BRRWN ONE ARRIVAL (BRRWN1)

VALID FOR WEST COAST ARRIVALS 0500 TO 0800Z

Louisville Int'l- Standiford 501

PARCL 1
N38 03.9 W085 42.6
Cross at 2400' (2396' with glide path guidance) and 170 Kts or less

SAFLT
N38 04.1 W085 40.8
Cross at 2000'

UPSCO
N37 59.9 W085 39.9
Cross at 1800' and at 170 Kts

BRBNX
N37 54.8 W085 40.9
Cross at or above 4300' and 210 Kts

JMCYS
N37 45.4 W085 42.8

Pocket City
113.3 PXV
N37 55.7 W085 45.7

BRRWN ONE
N37 45.5 W086 06.1
Cross at 11000' and at 2400 Kts

JMCSY
N37 45.4 W085 42.8

BRRWN ONE
N37 45.5 W086 06.1
Cross at 11000' and at 2400 Kts

FMS AIRCRAFT
1. Load the ILS prior to loading the arrival. Verify speed/altitude constraints for the arrival and approach. Do not put the final approach speed in either the runway or PAF waypoints.
2. Set the FMS descent speed to 89/310.
3. Set the altitude window to the lowest assigned ATC altitude.
4. B757/767/787-400: Use VNAV.
5. A300: Use the appropriate vertical mode to meet crossing and speed restrictions.
7. Select initial flaps no later than PTINO or BRBNX, to ensure speed reduction. Select next flap setting no later than BASKT or UPSO.
8. Arm the localization before receiving ILS approach clearance.
9. After capturing the localization, fly path or glide slope to the FAF.
10. No later than 1 mile prior to the final approach fix, select gear down and approach flaps.

NON-FMS AIRCRAFT
1. Filed/cleared routing - descent by ATC.

CHANGES: Text, Procedure name, Crossing restrictions.

ATC CLEARANCE INFORMATION
1. Upon initial contact with each controller, announce, "UPSxxx [BIGGEST ONE or BRRWN ONE] CDA."
2. Expect clearance from Indy Center for BGEST ONE or BRRWN ONE CDA.
3. Louisville Approach will clear with a pilot discretion descent; expect the ILS 35 Left or Right.
4. For M & S tail aircraft, upon initial contact with each controller, announce, "COMPANY SPACING BEHIND UPSWV."

Not to Scale
The T-Bone......

Louisville Intl-Standiford
501

CRDNL
N38 03.9  W085 42.5
Cross at 2400' (2396' with glide path guidance) and at 170 Kts or less

DNKIT
N38 01.3  W085 41.7
Cross at 3000'

PARCL
N38 04.6  W085 41.6
Cross at 2400' (2336' with glide path guidance) and at 170 Kts or less

SAFLT
N38 02.2  W085 40.8
Cross at 3000'

RASKT

UPSCO

0500 TO 0800
The “Bait Ball”
T-Bone Solution: Redesign

[Diagram showing network connections labeled as CALKS ONE, CBSKT ONE, BGEST ONE, BRRWN ONE, and SDF with an indication of R-3704.]
"Bait Ball" Solution -- ABESS

**Set-Up**
Airline Operations Center (AOC) provides speed advisories to the flight deck to deliver miles-in-trail at Continuous Descent Arrival (CDA) entry / merge fix or initiation of FDMS. Flight deck flies requested speed.

**Conduct**
Flight crew flies flight deck-based speed advisories when at initiation point.

**Termination**

Airline Based En-route Sequencing and Spacing (ABESS)

Flight deck-based M&S (FDMS)
Solution: CDTI Assisted Visual Separation (CAVS)

- Maintain “Visual Approach” arrival rates in Wx conditions which require Instrument Approaches
- Initially allows loss of “in-sight visual” during Visual Approaches
- Relieve controller of wake turbulence separation responsibility
Environmental Challenge

Cat Ex with supporting documentation:

1) Noise Impacts

The Integrated Noise Model (INM) will be used to determine changes in sound levels under each CDA flight track.

These analyses will extend along each track from the tie-in point with the existing SDF arrival tracks out to the 45 DNL (sound-level) point.

The output will be a table showing the changes in sound levels at grid points under each flight track with and without the CDA's.

The grids will extend three nautical miles on either side of the center-line of the tracks.

Distance between grid points will be one-half mile.

Basis input for the INM model will include all current SDF arrival aircraft operations and aircraft types on all currently - used arrival tracks.

Because of the nonstandard, reduced-thrust, descent profile, this "use" of the INM model for this project will require approval by FAA's Office of Energy and Environment.
2) Land Use:
An inventory and/or map of the land-use under each flight track needs to be prepared to include all noise-sensitive sites such as residential areas, schools, hospitals, historic/cultural properties and state/federal public-use areas such as parks, wildlife reserves and other natural areas. The sound level change at each receptor site (nearest grid point) needs to be recorded. If especially important sites are found, sound level changes specific to those sites may be needed.

3) Air Quality:
Aircraft using the CDA's are described as having lower emission levels than aircraft using standard arrival profiles. The emissions levels specific to this project need to be described, and the technical data used to derive these levels needs to be provided to the FAA.
Questions