Pilot-Controller Survey Results

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Pilot Questionnaire – CDA Bulletin

- Yes (92)
  - Overkill (2)
  - Have crews set in alt. restrictions imposed by ATC (1)

- No (5):
  - Too much info to digest (1)
Pilot Questionnaire – CDA Arrival Chart

- **Yes (94)**
  - Too many notes (2)

- **No (2)**
  - Missing “A” in TRN35 altitude restriction 3800A (1)
Pilot Questionnaire – FMS Database

- Yes (60)
- No (37)
  - Either missing, incorrect, out-of-place information: lat/long, course/distance, and speed/altitude constraints (33)
  - Undesirable manual pilot entry (10)
Pilot Questionnaire – ATC Clearance

- **Yes (89)**
  - Descent required early by ATC and at slower than profile (1)
  - Clearance came last moment – ATC busy (1)

- **No (8)**
  - Some variation from outlined bulletin e.g., refiling to Zarda from PXV (1), 2 mile prior to CHERI (1), runway change 17 to 35 (1), Indy Center imposed at or below restriction and FLCH was used to rejoin path (1), asked SDF approach but ATC gave CDA w/vectors to CHERI (1)

![Bar chart](image_url)
Pilot Questionnaire – Aircraft performance

Yes(73)
- Speed brake was required to stay on speed and vertical path(6)
- Recommended flap schedule insufficient to cope with separation closure(2), resulting in runway change

No(16)
- Insufficient deceleration (due to tailwind, ATC, etc.), speed brake was required to recover or stay on speed and vertical path (15)
- Runway change after descent started caused early speed reduction and thereby flap 15 extension (1)
- Did not capture g/s, high all the way in but was on speed (1)
- Inadequate control in VNAV (1)
- High and fast at FLP35 and TRN35 (1)

Unanswered(8)
- Speed brakes will always required(1)
- High power came on early, at TRN35(1)
Pilot Questionnaire – Workload

- Interpretation of pilots’ answers

- **High workload (22)**
  - High head-down time i.e., more time monitoring profile and using speed brake than listening to radio and monitoring other airplane parameters/performance (5)
  - Between CDA arrival and 35/17 approach (2)
  - Runway change (1)
  - Maintain separation because of a slower leading aircraft or faster trailing aircraft (3)
  - Manual entry of FMS data (10)
  - Due to lack of training (1)

- **Normal and slightly high workload (50)**
  - Simple, easy to fly, well-designed procedure
Pilot Questionnaire --
General comment

- **Overwhelmingly positive acceptance (92)**
  - “Excellent/great procedure!”, “…should do this every night …”, “Low workload”, “… would like to try procedure again.”

- **Minor skeptics (3)**
  - “…high workload to adhere to constraints”, “…won’t work in real world”, “Get rid of it!”

- **General concerns for improvement**
  - FMS/chart incorrect/missing information
  - Insufficient deceleration (e.g., to 240) in tailwind or slowing down early
  - Operation near placard spd limits and high speedbrake usage
  - Bulletin/checklist refinement (e.g., arming APP mode upon ATC approach clearance, clearance given at CHERI; include speed/altitude in the checklist)
  - Input wind info into FMS, move flap 1/5 points 5 miles out,
Center Controller – Feedback

- Test similar to daily operation, except 15 MIT separation and pilot discretion to descend CHERI
- Normal workload
- Separation compression concerns during 1st week, but seamless CDA flow by beginning of 2nd week
- Vector commands used more often than speed commands
- Training needed in order to operate on a regular basis
Pilot Questionnaire – Vref Distribution

**Histogram of B757 Vref**
- Avg = 122
- N = 44

**Histogram of B767 Vref**
- Avg = 133
- N = 46