Project ATL

Gaurav Nagle, Georgia Tech
and
Tom Staigle, Delta Airlines

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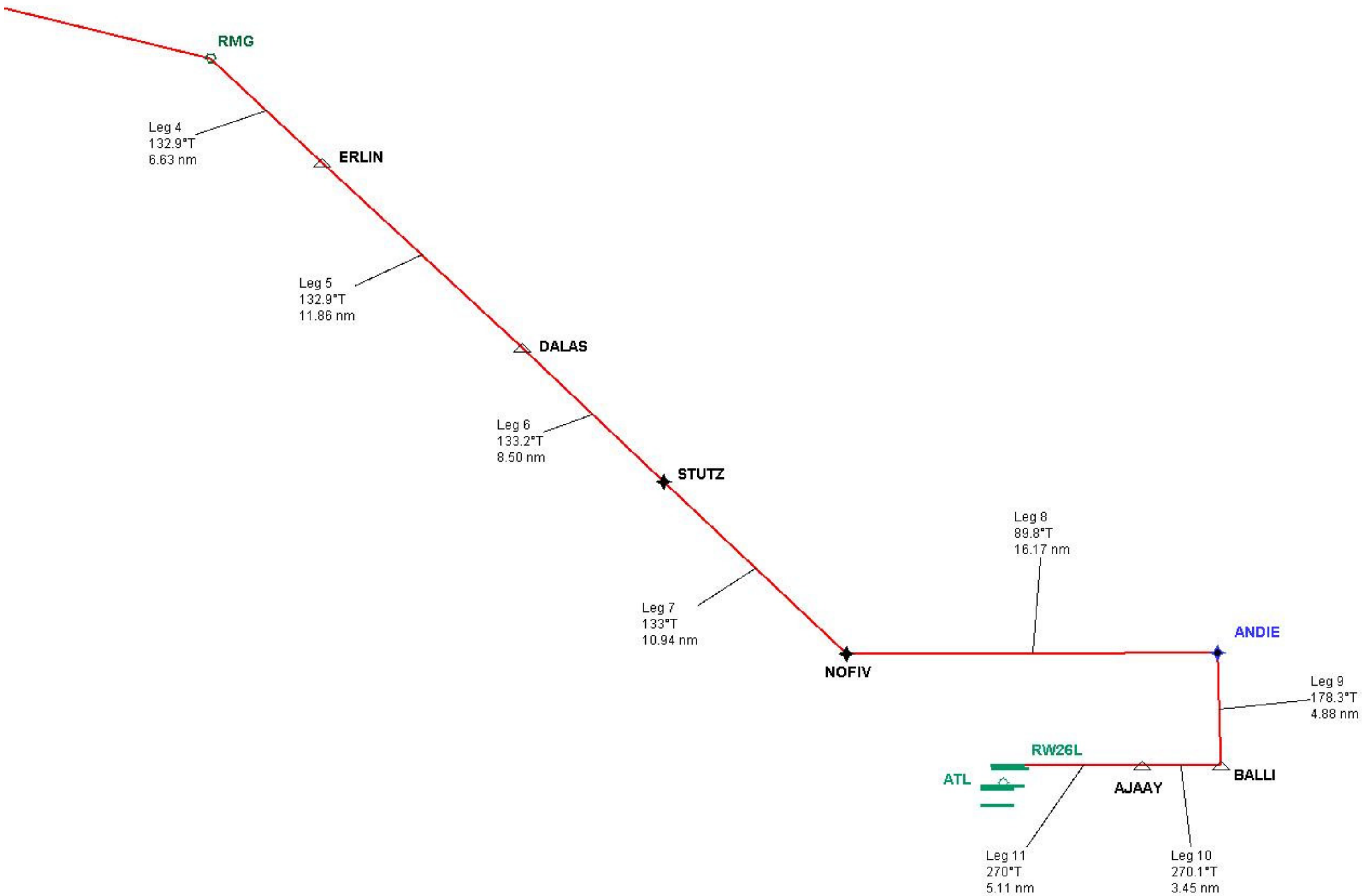
ERLIN 5 Arrival

- Analysis done for both 8L and 26R
- Transition point assumed to be RMG between ATL center and KATL TRACON
- Wind model developed using ACARS data from ATL arrivals
  - Wind data separated into bins based on the magnitude and sign of the wind component along the runway axis
  - Separate model built for each 20 knot bin between -110 and +110 knots

ERLIN5 to RW26R



ERLIN5 to RW26R

Waypoint	Distance from airport (nm)	CDA Altitude Restriction	CDA Speed Restriction
DEVAC	-183.6	None	None
CALCO	-111.6	None	None
RMG	-65.6	None	None
ERLIN	-59.0	None	None
DALAS	-47.2	None	None
STUTZ	-38.7	None	None
NOFIV	-27.8	None	None
ANDIE	-12.1	5000	175
BALLI	-8.0	3650	170
AJAAY	-4.9	None	None
RW 26R	0	None	None

Separation & Throughput

Separation Required at Threshold (nm)

Instrument Flight Rules (IFR)

Leading Aircraft

Trailing Aircraft

	L	757	H
L	2.5	5	5
H	2.5	4	4

Separation & Throughput

- Determined target separation at RMG as a function of
  - Desired confidence
    - Three confidence levels: 70%, 80%, 90%
    - Given: no wind, no restrictions and under IFR
  - Wind speeds
    - Three wind speeds: -20 (±10) knots, 0 (±10) knots, +60 (±10) knots
    - Given: 70% confidence, no restrictions and under IFR

Separation & Throughput (cont'd)

70% confidence, no restrictions, under IFR

Separation Required at RMG (nm)

when wind at 30,000 ft is -20 (±10) knots

Leading Aircraft

Trailing Aircraft	L	757	H
L	7.25	13	14.75
H	6.25	11.5	10.5

Separation & Throughput (cont'd)

70% confidence, no restrictions, under IFR

Separation Required at RMG (nm)

when wind at 30,000 ft is 0 (±10) knots

Leading Aircraft

Trailing Aircraft

	L	757	H
L	8	15	15.5
H	7.25	13.75	11.25

Separation & Throughput (cont'd)

70% confidence, no restrictions, under IFR

Separation Required at RMG (nm)

when wind at 30,000 ft is +60 (±10) knots

Leading Aircraft

Trailing Aircraft

	L	757	H
L	8.25	16.5	16.75
H	7.25	15	12

Separation & Throughput (cont'd)

70% confidence, no restrictions, under IFR

Expected "Buffer" at Threshold (nm)

when wind at 30,000 ft is -20 (±10) knots

Leading Aircraft

Trailing Aircraft

	L	757	H
L	0.5	0.36	0.4
H	0.51	0.42	0.36

Separation & Throughput (cont'd)

no wind, no restrictions, under IFR

Expected "Buffer" at Threshold (nm)

when wind at 30,000 ft is 0 (±10) knots

Leading Aircraft

Trailing Aircraft

	L	757	H
L	0.72	0.69	0.49
H	0.61	0.64	0.48

Separation & Throughput (cont'd)

70% confidence, no restrictions, under IFR

Expected "Buffer" at Threshold (nm)

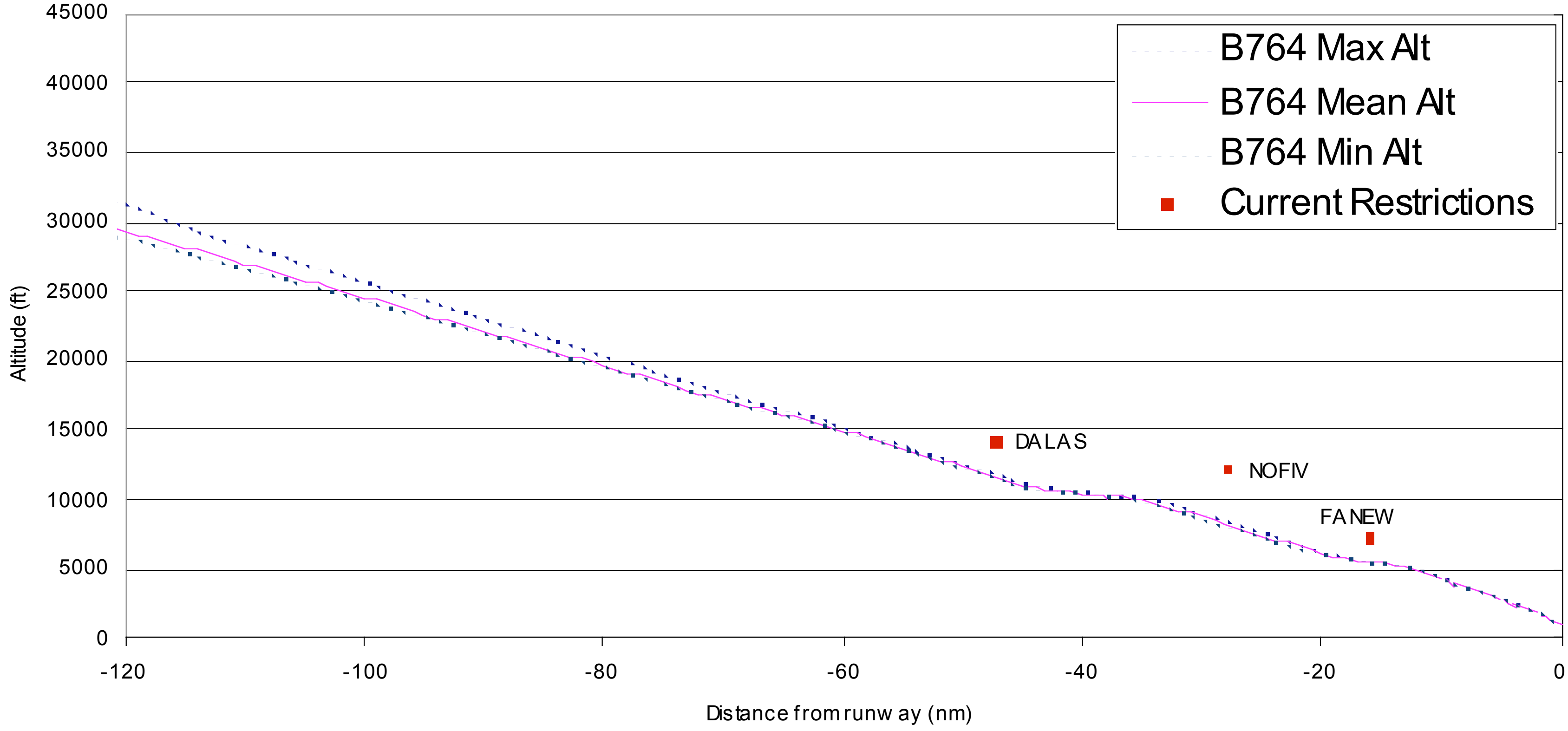
when wind at 30,000 ft is +60 (±10) knots

Leading Aircraft

Trailing Aircraft

	L	757	H
L	0.94	0.71	0.48
H	0.78	0.6	0.52

B764 Trajectory with +60 (±10 kts) wind



Delta's Objectives

- Long Term: RNAV STARS with Descend Via to optimized CDA vertical paths.
- Mid Term: More efficient STARS with increased emphasis on aircraft efficiency. Airspace improvements for SIDS.
- Short Term: Demonstration of predictable vertical path and usable spacing tool.

Simulator Evaluations

- East and West approaches, varying winds & aircraft
- Findings
  - B757: Descent Winds, Speed Restrictions
  - Consistently hit predicted altitudes within 100’
  - Little or no use of drag devices
  - Stabilized approach criteria

Procedure Development

- Simulator Work
- POI / FAA Support
- ATC Coordination

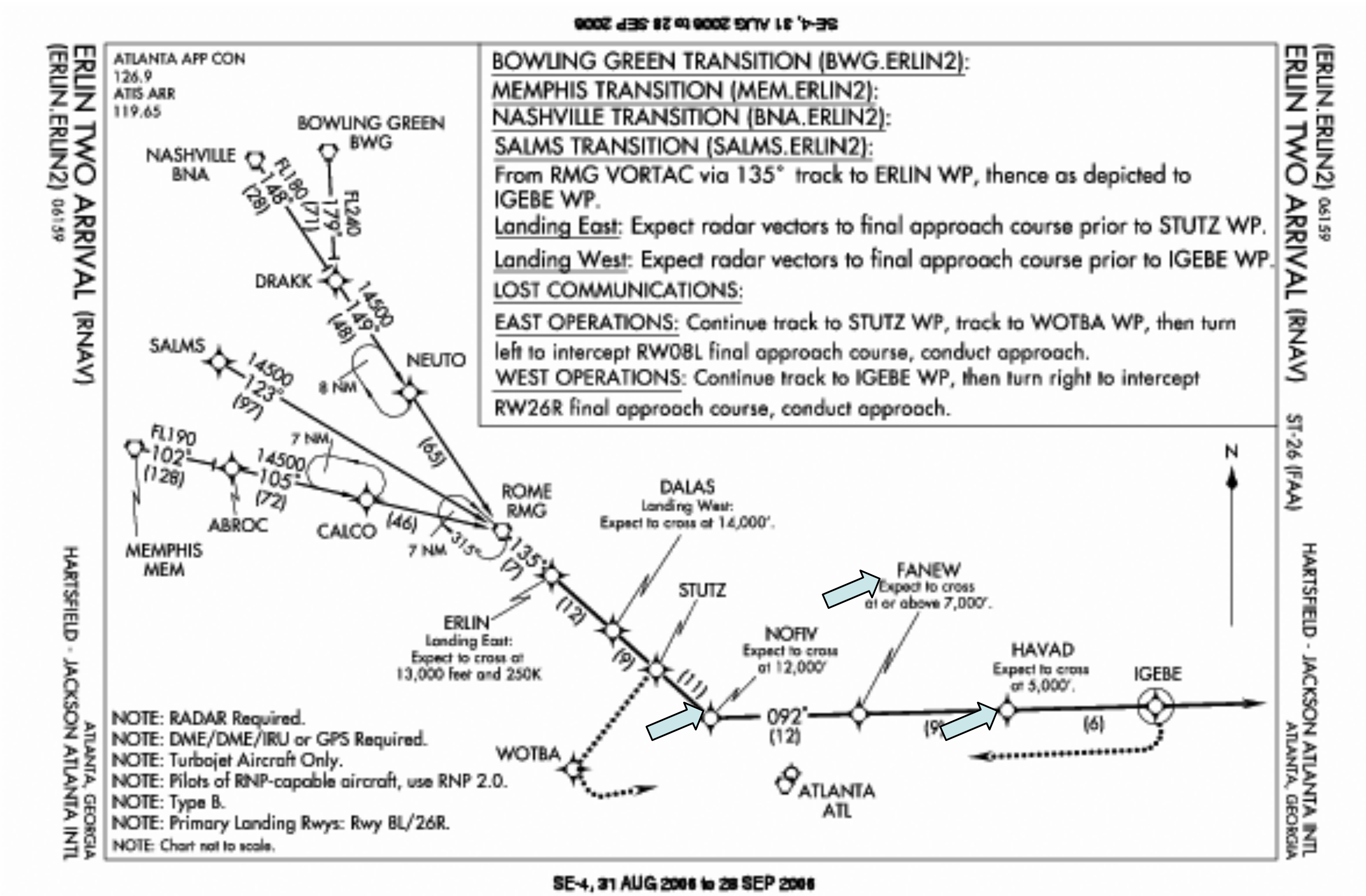
- My questions ?
  - RTA
  - B757 VNAV

Flight Demonstrations

- 6 to 10 flights per day
  - West Coast / Early Morning
  - ERILN TWO RNAV ARRIVAL
  - ILS 8L / 26R
  - FMS Visual

- Desired Results:
  - Validate ability to consistently predict vertical paths
  - Validate accuracy and usability of spacing tool
  - RTA

Current Inefficiencies



Delta’s Objectives

- Long Term: RNAV STARS with Descend Via to optimized CDA vertical paths.

- Mid Term: More efficient STARS with increased emphasis on aircraft efficiency. Airspace improvements i.e. NOFIV.

- Demonstration of predictable vertical path and usable spacing tool.

LOC/DME I-GXZ	APP CRS		26R	26L
110.1	272°	Rwy ldg	9000	10000
Chan 38		TDZE	990	995
		Apt Elev	1026	1026

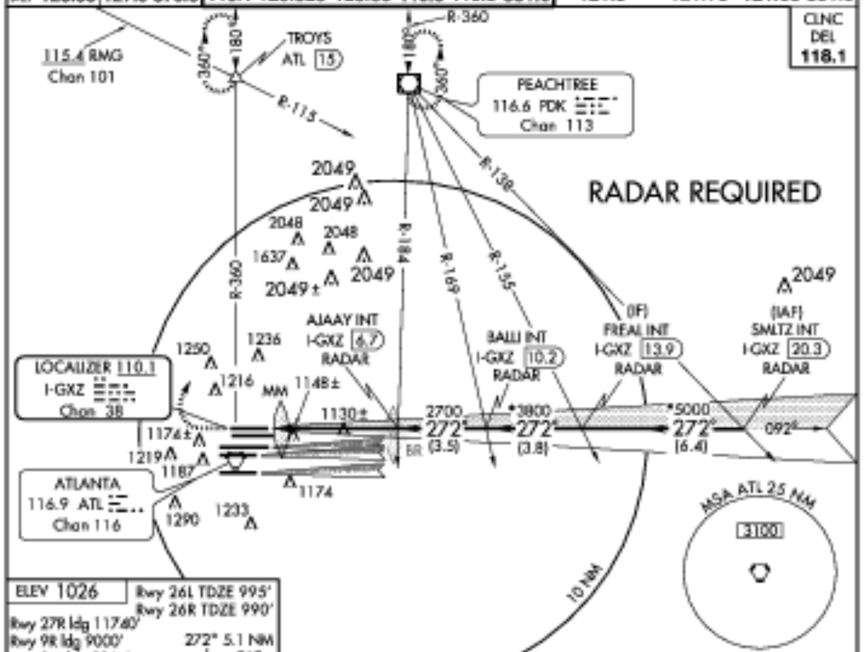
ATLANTA/ HARTSFIELD - JACKSON ATLANTA INTL (ATL)
ILS or LOC RWY 26R

Simultaneous approach authorized with Rwy 27L or 27R or 28, or Rwys 27R and 28. Inoperative table does not apply to sidestep Rwy 26L Cats A and B. LOC procedure NA during simultaneous operations.

MALSR

MISSED APPROACH: Climb to 1400 then climbing right turn to 3500 via ATL VORTAC R-360 to TROYS Int/ATL 15 DME and hold.

ATIS	ATLANTA APP CON	ATLANTA TOWER 8L-26R	8R-26L	9L-27R	9R-27L	10-28	ALL RWYS	GND CON (8L-26R,8R-26L)	(9L-27R,9R-27L)	10-28	ALL RWYS
ARR 119.65 DEP 125.55	127.9 379.9	119.1	125.325	123.85	119.3	119.5	381.6	121.9	121.75	121.65	381.6

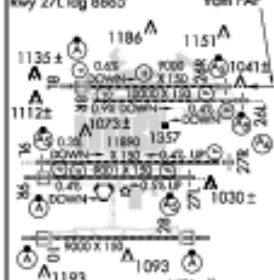


ELEV 1026

Rwy 26L TDZE 995'
Rwy 26R TDZE 990'

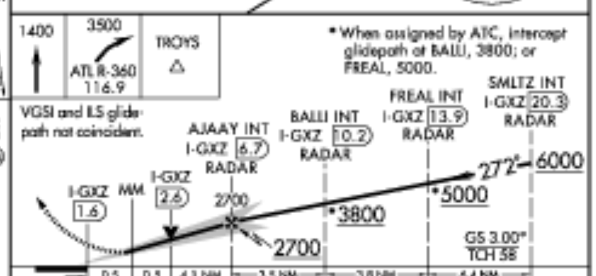
Rwy 27R ldg 11740'
Rwy 9R ldg 9000'
Rwy 27L ldg 8865'

272° 5.1 NM from FAF



HIRL all runways

TDZ/CL Rwys 8L, 8R, 9R, 10, 26R, 28 and 27L



CATEGORY	A	B	C	D
S-ILS 26R	1190/18 200 (200-½)			
S-LOC 26R	1380/24 390 (400-½)			1380/40 390 (400-¾)
SIDESTEP RWY 26L	1380/60 385 (400-1¼)			1380-1½ 385 (400-1½)

FAF to MAP 5.1 NM

Knots	60	90	120	150	180
Min:Sec	5:06	3:24	2:33	2:02	1:42

SE-4, 31 AUG 2006 to 28 SEP 2006