UL 793-UL 674-UL 337-UL 423 and UL 471

EVALUATION of RNAV ROUTES IMPLEMENTATION (I)

Dificulties during Implementation Process

- SID/STAR not implemented within some TMAs
- Prohibited/restricted airspace and one point entry only in some States: Parallel routes not implemented
- Some States required RNAV routes follow existing routes in some FIRs: Non Orthodromic RNAV routes
- Segments routes overlap existing routes: elimination of some existing routes or segments of routes
- Mountaneous Areas: Operational restrictions, therefore Non Orthodromic RNAV routes

EVALUATION of RNAV ROUTES IMPLEMENTATION (II)

Benefits

- Reduction of flight distances and times
- Significant fuel and economics savings
- Greater possibilities to obtain optimum FLs
- Path far from mountainous terrains
- Flexible use of airspace
- Uniform application of longitudinal separation
- Extensive use of MNT

EVALUATION of RNAV ROUTES IMPLEMENTATION (III)

Benefits

- Eliminitation of some ATS and ground air communication shortcomings
- Obtain substantial planning and implementation experience
- Significant improvements in regional co-ordination process

RNAV ROUTES IMPLEMENTED

AP/ATM/3 Meeting (II)

- RNP 10 Pre-operational Trials in parallel routes UL 780 and UL 302
- RVSM Implementation Plan in the CARSAM Regions

RNP and RVSM Implementation (I)

Regional Project RLA/98/003
Traffic Flows analysis:

- In general, there is no traffic congestion in CAR/SAM regions
- Some sectors do experience some congestion during peak hours periods
- Therefore, a significant number of aircraft do no operate at optimum FLs not always available.

RNP and RVSM Implementation (II)

Reduced separation minima using RNP and/or RVSM provides following benefits:

- Increase available optimum FLs for longer time periods
- Increase airspace capacity
- Uniform separation minima
- Standardized ATS procedures
- Increase air operations safety

RNP and RVSM Implemetation (III)

Althoug ACCs in CAR/SAM Regions already apply 10 minutes MNT and 80 NM RNAV separations, these will not be sufficient to meet future requirements (increase of aispace capacity and the availability of optimum FLs due to the forseeable increase of traffic.)

RNP and RVSM Implementation (IV)

Some tasks and costs to be considered:

- Study of impact in the aispace
- Study of impact in ATS
- Study of impact on aircraft fleet
- Training of ATC personnel
- Aircraft certification programme
- Safety assessment: TLS 5 x 10^{-9}
- CBA
- Regional monitoring agency

RNP and RVSM Implemetation (V)

- Participation in follow-up and implementation meetings,
- Equipage of aircaft to operate in the airspace
- RNP and/or RVSM equipment approval
- Aircrew training
- Additional operational procedures, etc.
- Continue Quality Control Monitoring

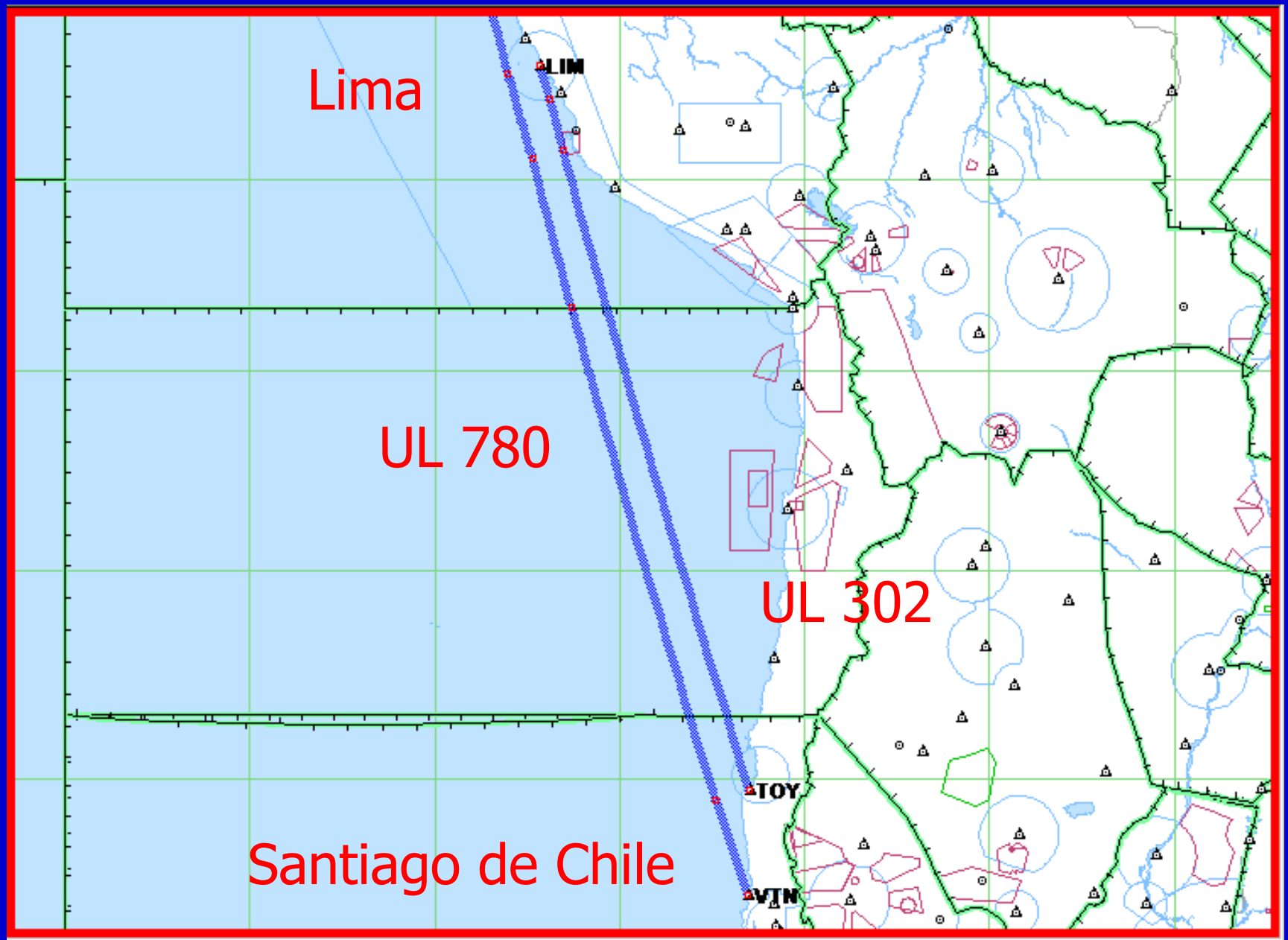
RNP 10 Implementation

Milestones

- RNP 10 Pre-operational Trials on segment route Santiago/Lima of UL 780 and UL 302 routes: September 2003

- Study RNAV and RNP 10 Strategy Implementation in the CAR/SAM regions (RNAV/RNP Task Force)

Parallel RNAV RNP 10 routes



RVSM Implementation (I)

Milestones

- GREPECAS 10 approved RVSM implementation in the CAR/SAM Regions: April 2004
- USA RVSM implementation: December 2004
- Harmonization date for implementation
- Vertical segment to be implemented: GREPECAS 11 (November/December 2002)
- GREPECAS 10 approved CAR/SAM Regional Airspace Monitoring Agency (CARSAMMA)

RVSM Implementation (II)

Tasks

- Safety Assessment: TLS $5x10^{-9}$
- Monitor height-keeping performance: Altimeter System Error (ASE)
- Collection of operational data
- RVSM readiness (90%) of CAR/SAM domestic and international fleet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