



# ***NAM/CAR AIR TRAFFIC FLOW MANAGEMENT SEMINAR ATFM***

***Tegucigalpa, Honduras  
27 – 31 March 2006***

*Presented by: Rodolfo Olivares*



## ***Mexico ATFM Development***

- ***Background.***
- ***Where we are.***
  - *What we have.*
  - *How we use that Tools.*
- ***Airport Capacity.***
- ***Regulations.***
- ***The future.***



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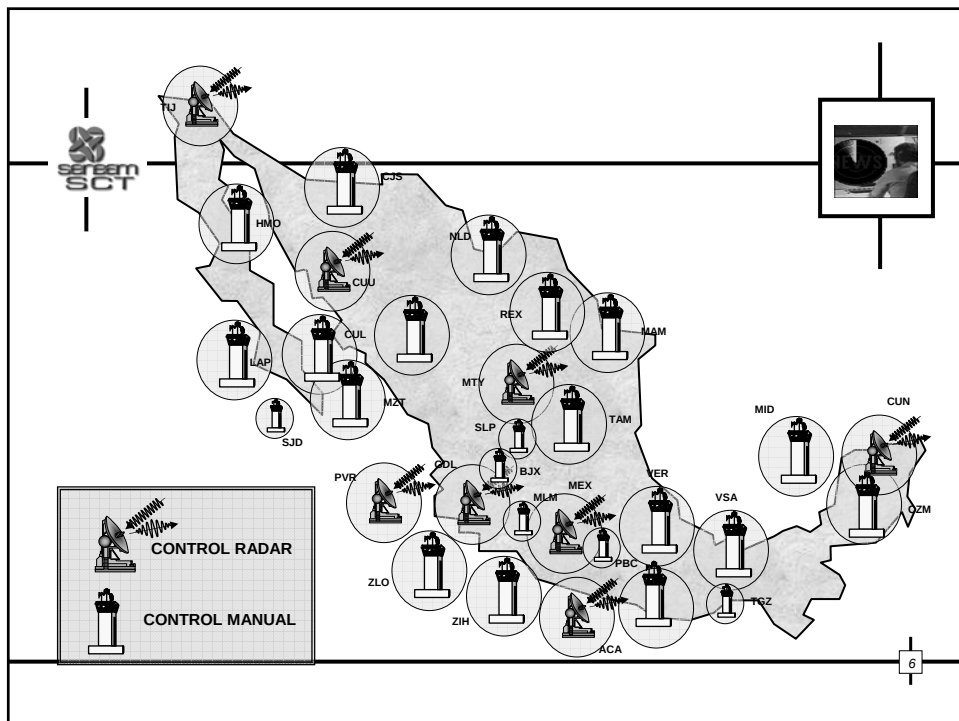
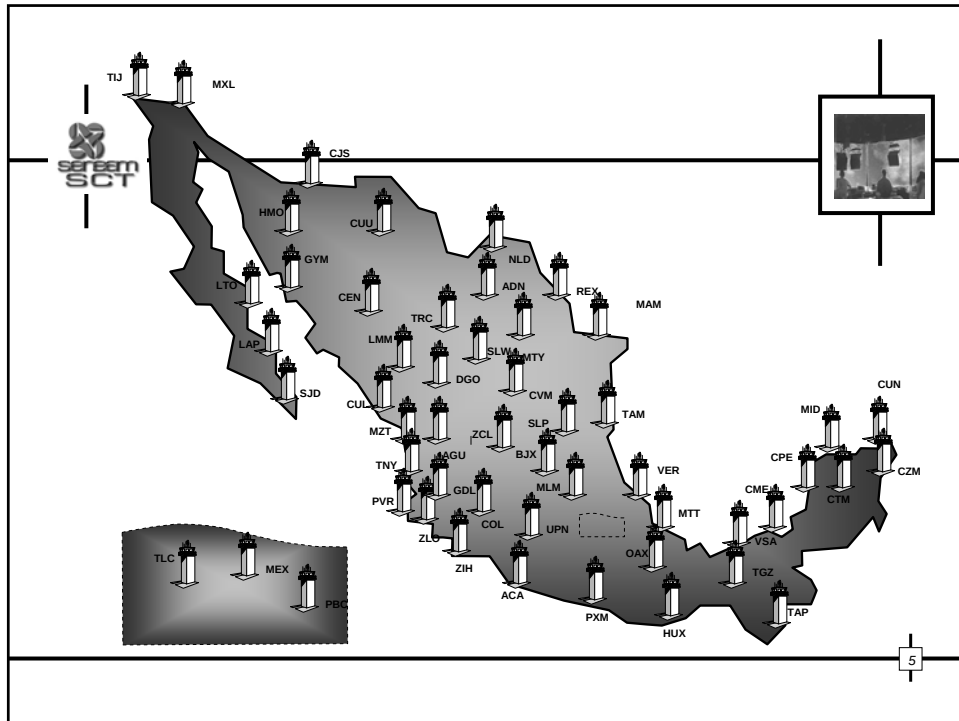
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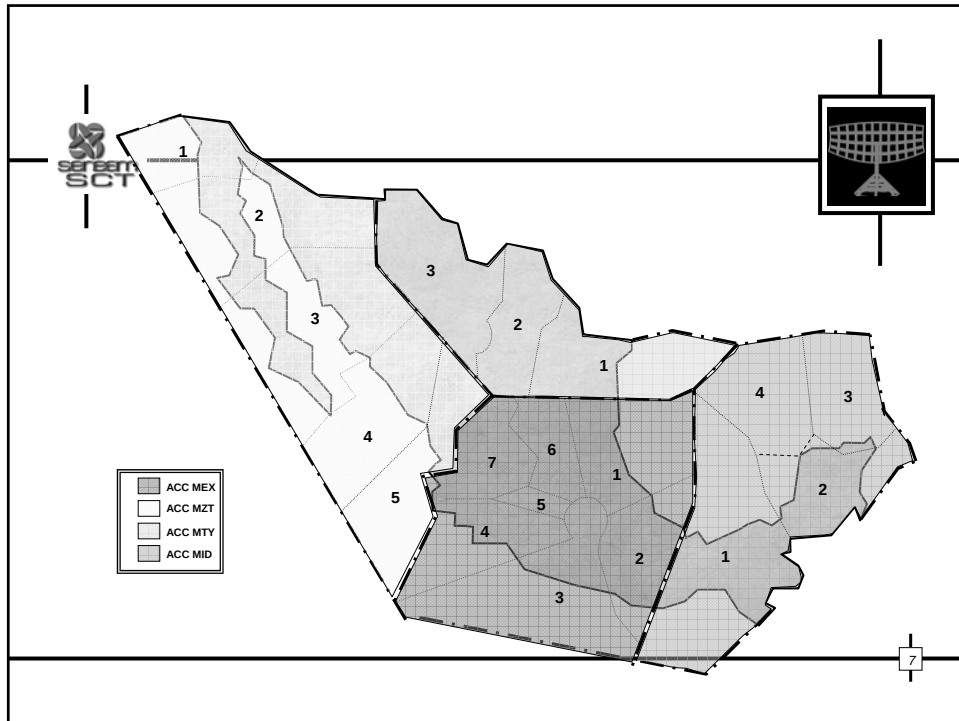
## ***Background***



- ***SENEAM.***
  - ATS provider in Mexico.*
- ***Government Company .***
  - Part of the Communications and Transport Minister.*
- ***Facilities.***

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## Background Cont..

- **Growing traffic.**
  - 4% per year in the Country (average).
  - Cancun and Toluca 6.5%.
  - Los Cabos 13%.
- **Delays, Holding patterns, High Workload, High incident level.**
  - Mexico City, Cancun and Los Cabos.
    - Monterrey and Guadalajara some times.





## ***Background Cont..***

- ***2000.***
  - ***Strategy***
    - ***Change in the air space layout in MEX.***
    - ***Airway System Review.***
  - ***Pre-Tactic.***
    - ***We commence to Define Flow Control procedures.***
    - ***Software developed by a group of Air Traffic Controllers Flow Control (PROSAT).***

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## ***Background Cont..***

- ***Coordination with Airport Service provider –AICM-, to establish Airport Capacity.***
- ***Communication process with Customers .***
- ***Flow Control training (Supervisors).***

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## ***Background Cont..***

- ***2001.***

***Flow Control to MEX Commence***

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## ***Where we are...***

- ***Los Cabos Situation.***
  - *Since 2005 Flow Control To SJD is in effect.*
  - *Airport Capacity.*
- ***Cancun Situation.***
  - *Flow Control will be establish by april 1st.*
- ***Toluca Situation.***
  - *Satellite Airport located 25 NM west*

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## ***Where we are...***

- ***Toluca Situation.***
  - *Mexico City Satellite Airport located 25 NM west.*
  - *1994 Business Aviation moves from Mexico City International to TLC.*
  - *New Airlines and General Aviation increasing.*
  - *Flow Control will be establish by the end of june.*
- ***Guadalajara and Monterrey Intl.***

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## ***What we have....***

- ***Flow Control Unit located in MEX ACC.***
  - ***PROSAT.***
  - ***ETMS.***
  - ***Sat - Com system with the whole Country.***
  - ***AFTN.***
  - ***Flow Control Manual.***

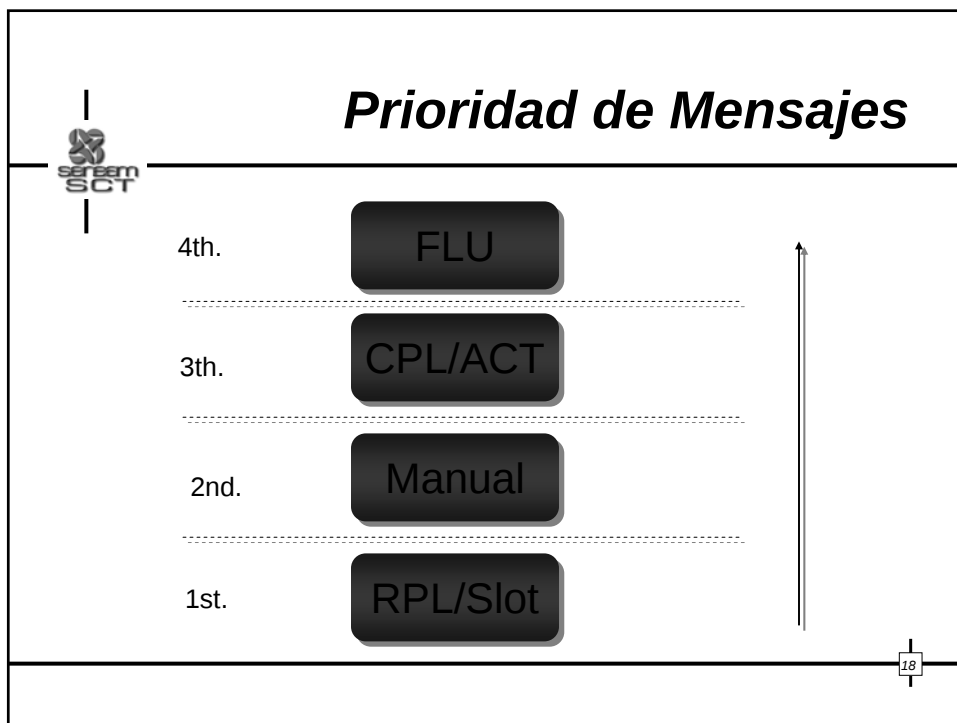
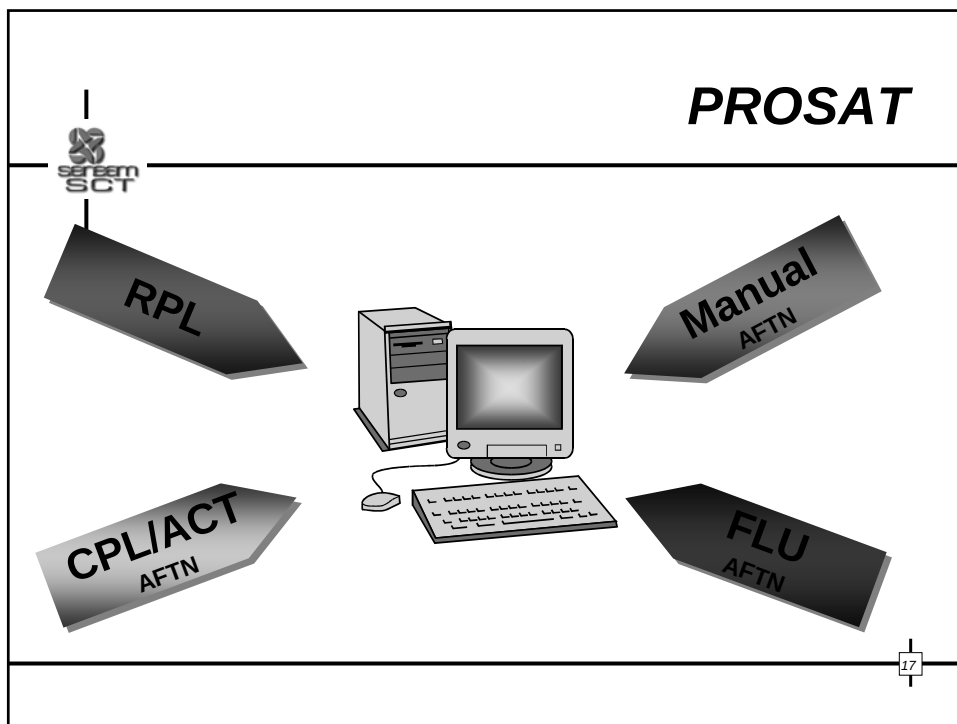
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## ***How we use that Tools...***

- ***PROSAT.***
  - Pronostico de Saturacion.***
  - Saturation Forecast.***

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|                           |                           |      |                      |                     |
|---------------------------|---------------------------|------|----------------------|---------------------|
| 40 DAL279 KJFK B752 1758  |                           | 1800 | -----SER403          | Alarma de Postes 10 |
| 39 XBHVY MMGL AC90 1758   |                           |      | -----XBHVY DAL279    | PASTEJE 15          |
| 38 CHP238 MMTB B732 1757  |                           | 1755 | -----CHP238 MXA612   | PACHUCA 9           |
| 37 MXA612 MMMD A319 1756  |                           |      | -----AMX645 MXA612   | PUEBLA 13           |
| 36 AMX645 KLAX B737 1756  |                           | 1750 | -----AMX304 MXA392   | TEQUES 7            |
| 35 MXA392 SKBO A319 1754  |                           |      | -----AMX6572         |                     |
| 34 AMX304 MMHA MD82 1754  |                           | 1745 | -----MXA262          |                     |
| 33 AMX6572 MMUN B737 1752 |                           |      | -----MXA802          |                     |
| 32 MXA262 MMTB F100 1751  |                           | 1740 | -----TAO3299 TAO319  |                     |
| 31 MXA802 MMHA A319 1749  |                           |      | -----CBE7214 MXA370  |                     |
| 30 MXA680 MMCE A320 1746  |                           | 1735 | -----TAI230          |                     |
| 29 TAO319 MMMA AT43 1746  |                           |      | -----USA629 AMX259   |                     |
| 28 TAO3299 MMLO AT45 1746 |                           | 1730 | -----MXA622          |                     |
| 27 MXA370 MMUN B752 1741  |                           |      | -----SER681          |                     |
| 26 CBE7214 MMTB F100 1741 |                           | 1725 | -----TAI570 TAO481   |                     |
| 25 TAI230 MSLP A320 1737  |                           |      | -----MXA903          |                     |
| 24 AMX405 KJFK B752 1736  |                           | 1720 | -----SER6320 AMX917  |                     |
| 23 AMX259 MMCS MD87 1736  |                           |      | -----AMX443          |                     |
| 22 USA629 KCLT A319 1736  |                           | 1715 | -----JOS5218 NWA1821 |                     |
| 21 MXA622 MMVR F100 1735  |                           |      | -----LCD401 MXA831   |                     |
| 20 SER681 MMGL DC93 1733  |                           | 1710 | -----MXA216          |                     |
| 19 TAO481 MMZO AT43 1732  |                           |      | -----XCPFT           |                     |
| 18 TAI530 MSLP A320 1732  |                           | 1705 | -----DAL519          |                     |
| 17 MXA903 KLAX A320 1730  |                           |      | -----MXA703          |                     |
| 16 AMX917 MMNY MD82 1729  | 40 DAL367 KATL B752 1859  |      |                      |                     |
| 15 SER6320 MMVA DC91 1729 | 40 XCPFB MMLO AC95 1852   |      |                      |                     |
| 14 AMX443 KBOS B737 1727  | 40 TAO7471 MMZO AT43 1844 |      |                      |                     |
| 13 NWA1821 KDTW A319 1726 | 40 CHP271 MMTB B732 1840  |      |                      |                     |
| 12 JOS5218 MGGT B722 1726 | 40 CBE7214 MMUN DC93 1842 |      |                      |                     |
| 11 CHP273 MMNY B732 1725  | 40 MXA1681 SEGU A318 1825 |      |                      |                     |
| 10 MXA581 MMGL A320 1725  | 40 AMX576 MMUN MD88 1822  |      |                      |                     |
| 9 LCD401 MMTJ B737 1725   | 40 MXA593 MMPR A320 1818  |      |                      |                     |
| 8 MXA216 MMOK A320 1723   | 40 PMO211 MMTB B732 1812  |      |                      |                     |
| 7 COA1972 KEWR B737 1722  | 41 SER403 MMAS DC9 1800   |      |                      |                     |
| 6 XCPFT MMLO GLF2 1721    |                           |      |                      |                     |
| 5 DAL519 KATL B752 1720   |                           |      |                      |                     |
| 4 AMX703 MMHO MD82 1718   |                           |      |                      |                     |
| 3 MXA831 KSAT A318 1714   |                           |      |                      |                     |
| 2 AMX129 MMAS MD82 1712   |                           |      |                      |                     |
| 1 ACA993 CYYZ B762 1711   |                           |      |                      |                     |

50 Estimados

de Precación: 8

de Saturación: 9

Millas/Aeronav: 5

Borrado Automático

Marcar Nuevos

MAN Mgd

DEL DEL\*

Setup Selir

PROSAT

**Ingreso Manual de Información**

Identificación:  Tipo de aeronave:   Aeropuerto de Despegue:

ETD:  ETE:  ETA:

NO CABE. ETA sugerido:

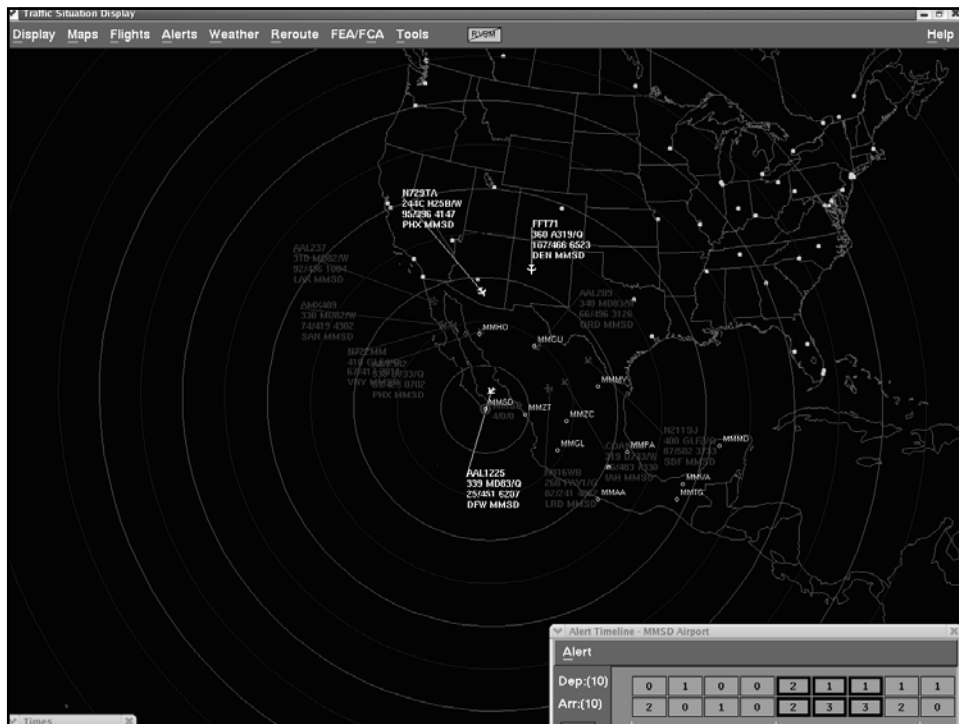
Ruta:  Millas:

• Una vez que se ingresa la información del vuelo PR el plan de capacidad del aeropuerto y del tipo de entrada.

• En este caso el ETD no afecta la capacidad

• En este caso el ETD Si afecta la capacidad y nos sugiere un ETD

20



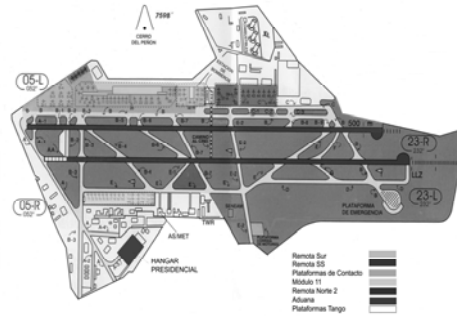
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## Airport Capacity.

- **Mexico City.**
  - **AAR 54.**
  - **36 Arrivals.**
  - **On Trail Separation.**



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## Airport Capacity

| On Trail Separation | Capacity per hour |
|---------------------|-------------------|
| 4 M.N.              | 40 Arrivals       |
| 5 M.N.              | 36 Arrivals       |
| 6 M.N.              | 28 Arrivals       |
| 7 M.N.              | 26 Arrivals       |
| 8 M.N.              | 24 Arrivals       |
| 9 M.N.              | 22 Arrivals       |
| 10 M.N.             | 20 Arrivals       |

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## ***Airport Capacity***

- ***Cancun.***
  - *Single Runway.*
- ***Los Cabos.***
  - *Single Runway.*
  - *No Approach Radar.*
  - *No Taxiways to Clear the Runway.*
- ***Toluca.***
  - *ILS CATIII.*

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## ***Regulations.***

- ***MEX International.***
  - *Controlled Airport.*
  - *Slot Distribution Program.*
  - *Congress Legislation and Rules ready.*
  - *7 Hour Saturation Declaration.*
- ***Next Cancun.***

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## ***The future.***

- ***National Flow Control Command Center.***
  - ***Located in Mexico City.***

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## ***The future.***

- ***System Update EUROCAT X.***
  - ***Already installed in MID ACC and CUN APP.***
  - ***Next MTY ACC.***
  - ***Traffic Management tool.***
  - ***Processes Finish by the end of 2008.***

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## *The future.*



- ***Airspace layout review.***

- ***MEX - CDA STAR's and SID's with no altitude restriction (primary), review in effect.***
- ***Arrivals in just one Flow with Continuous Descend Approach profile.***
- ***Airspace with Risk assessment.***
- ***No Crossing Trajectories during descend.***
- ***Reduces ATCO's workload.***
- ***Designed to maintain the Airport capacity.***

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## *CDA Concept description*



FL240

FL220

FL200

280 Kts

250 Kts

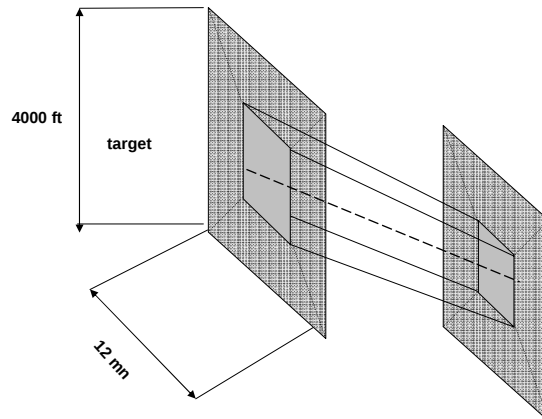
220 Kts

190 Kts

32



## ***CDA Concept description***



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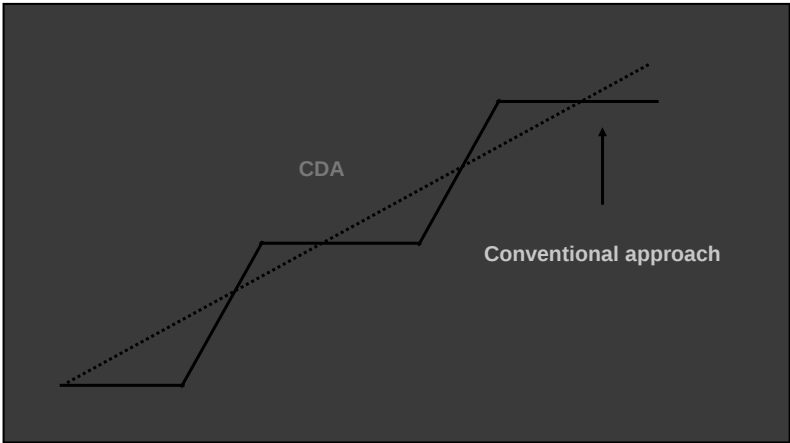
## ***CDA Concept description***

- ***Concept description***
  - *lower power settings*
  - *from higher altitude*
  - *no level-off segment*

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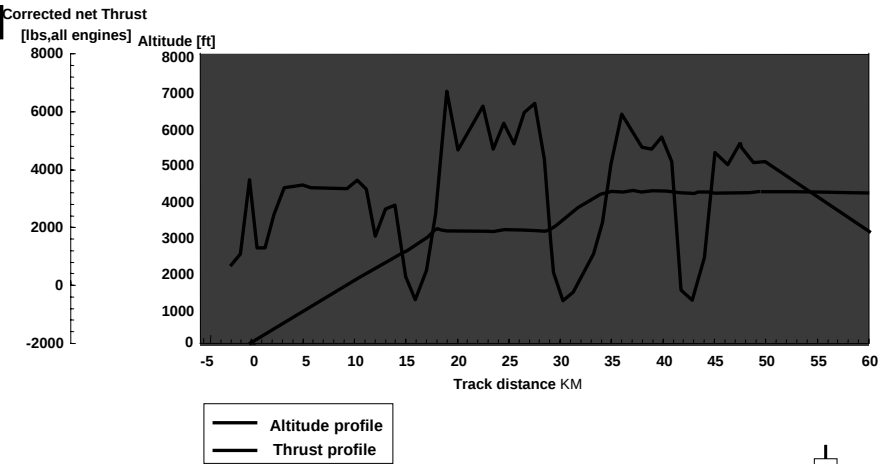
# CDA Concept description.



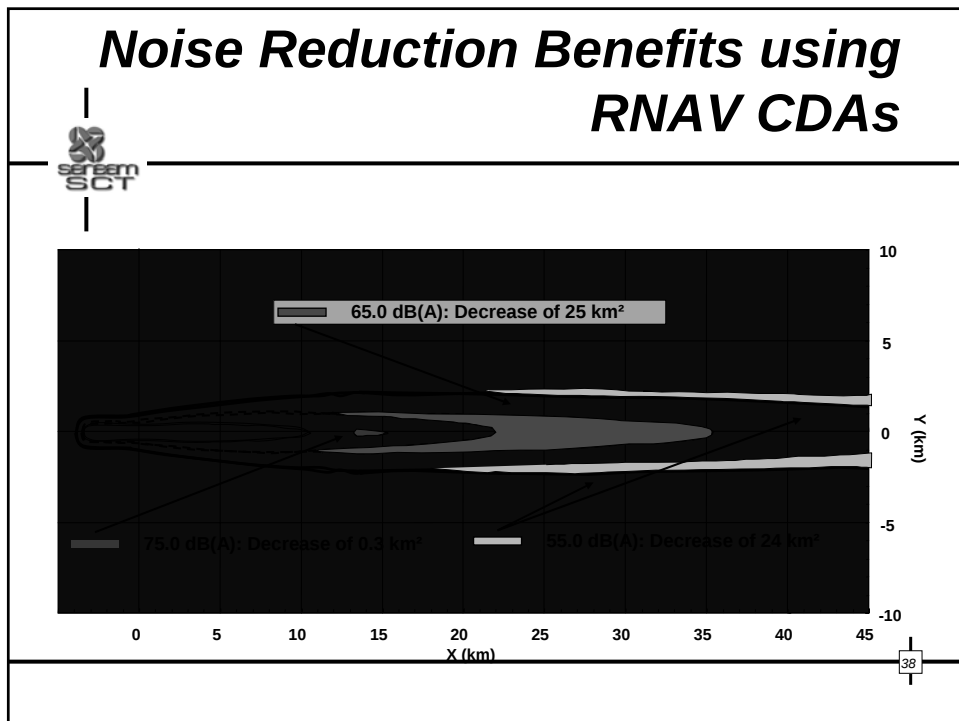
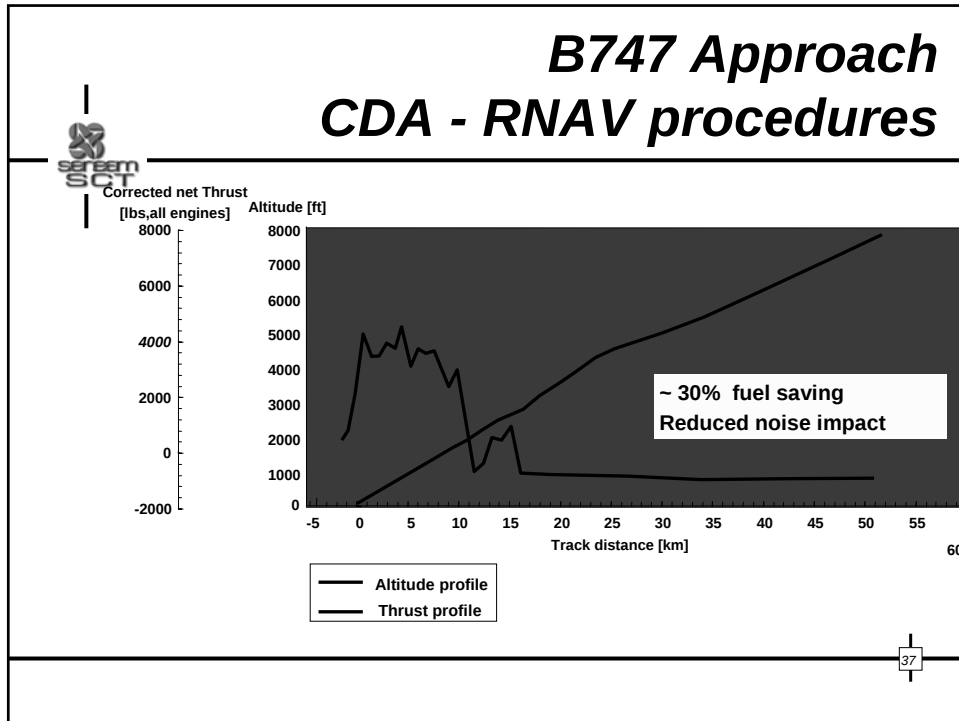
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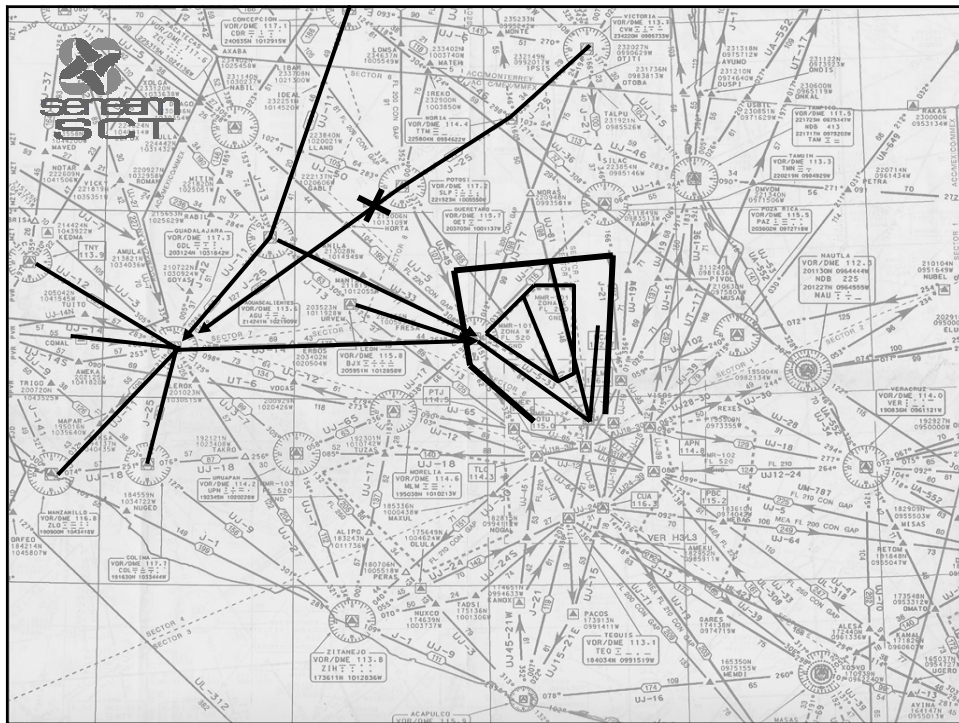
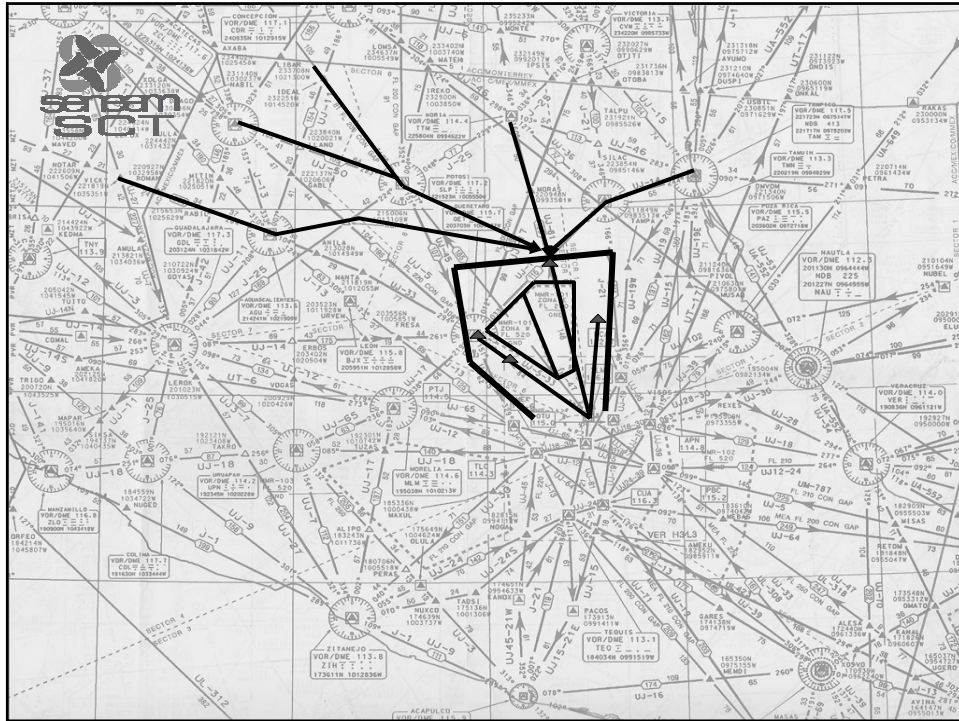


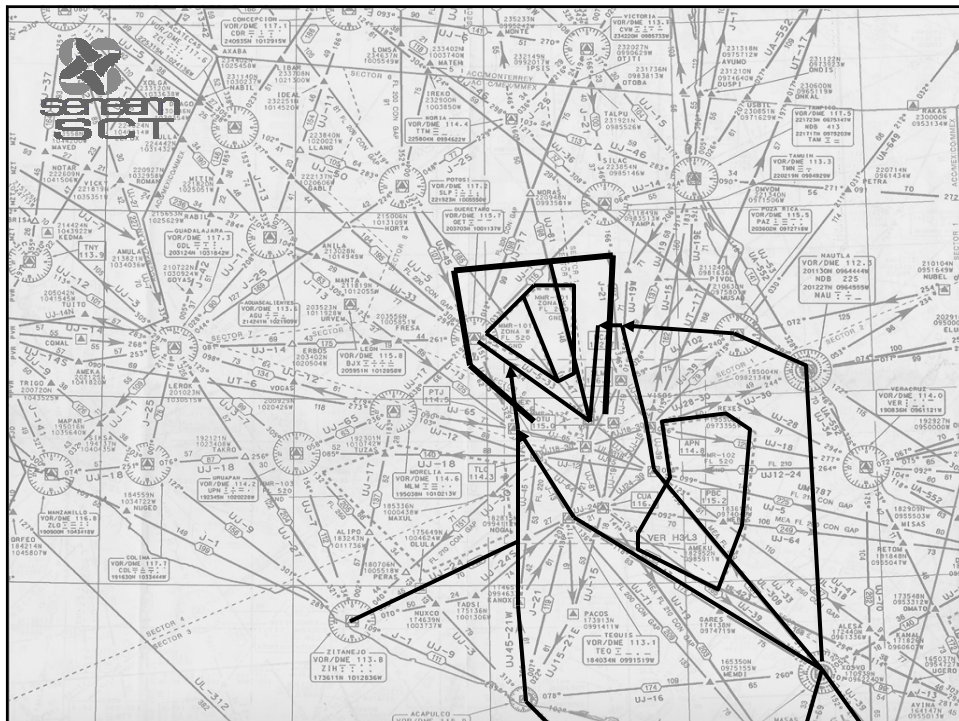
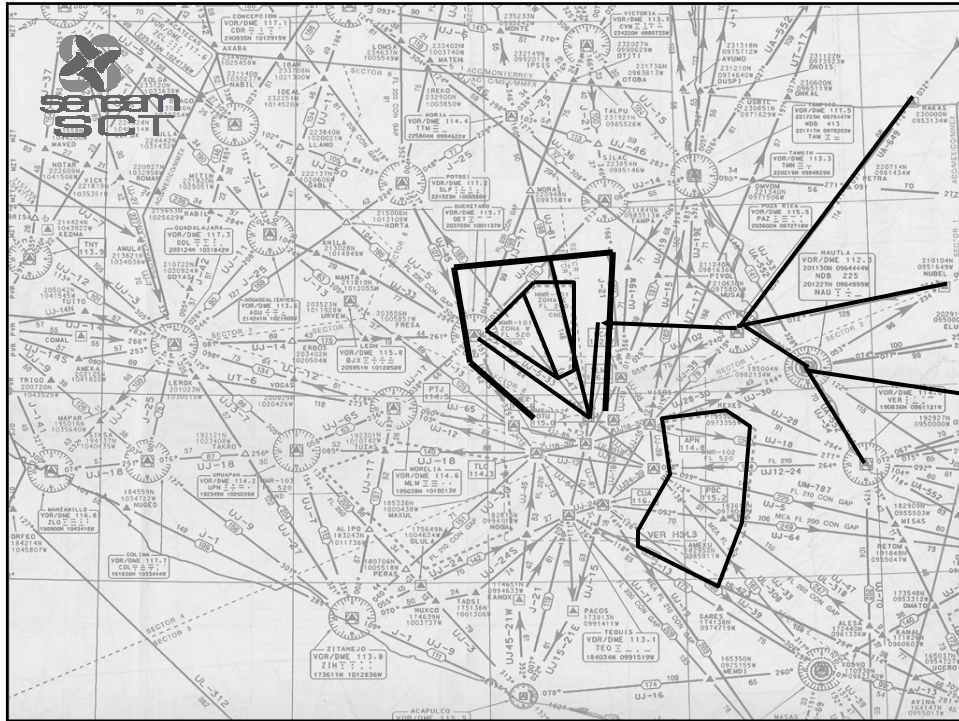
# B747 Radar Vector to ILS

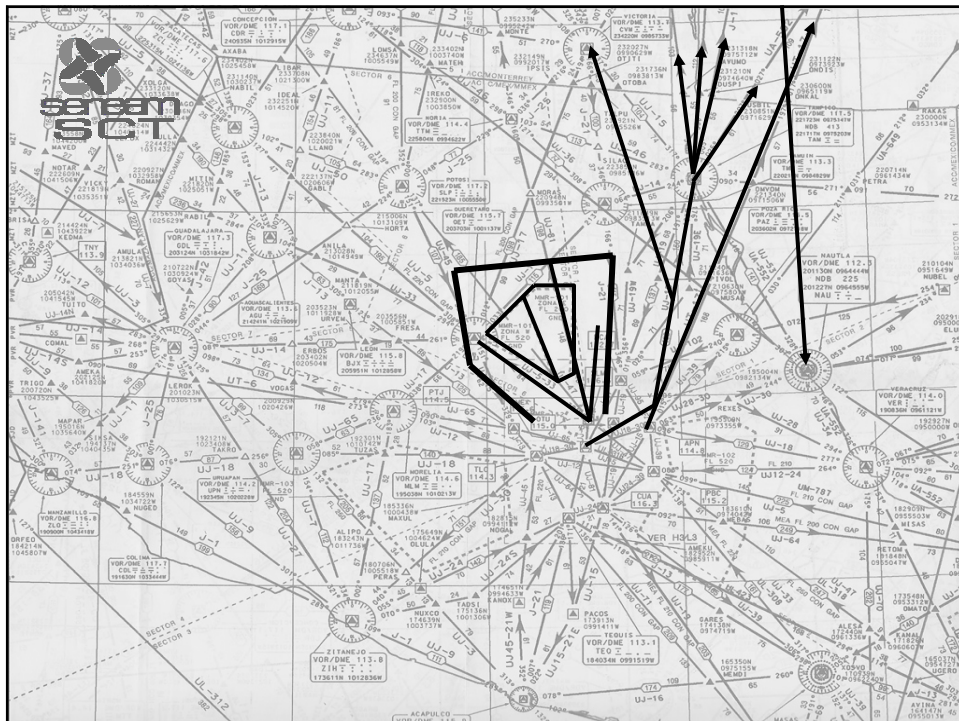
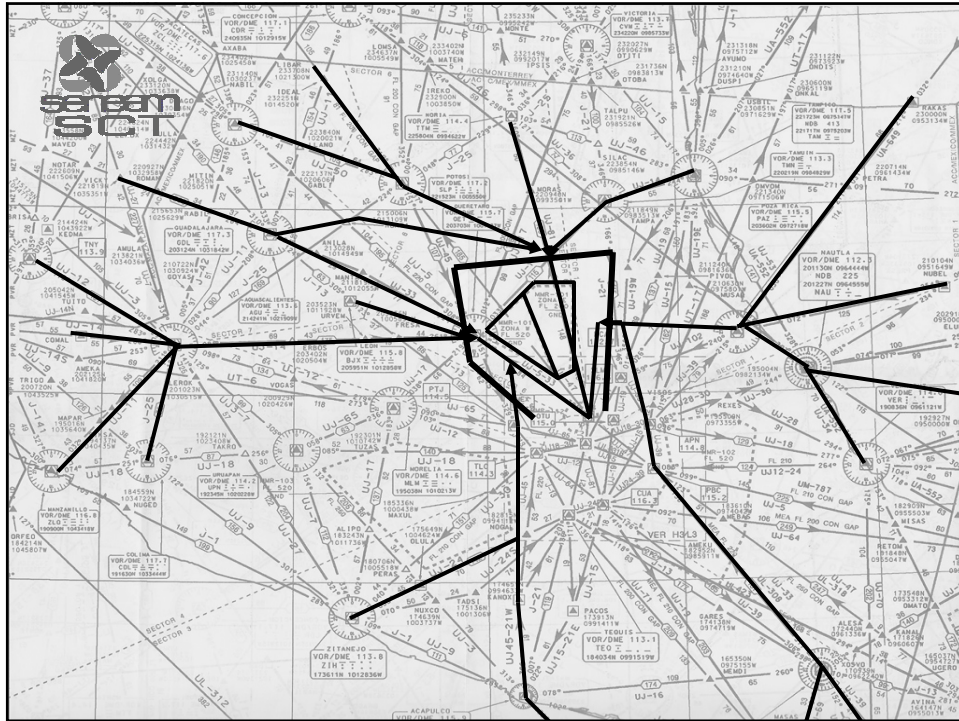


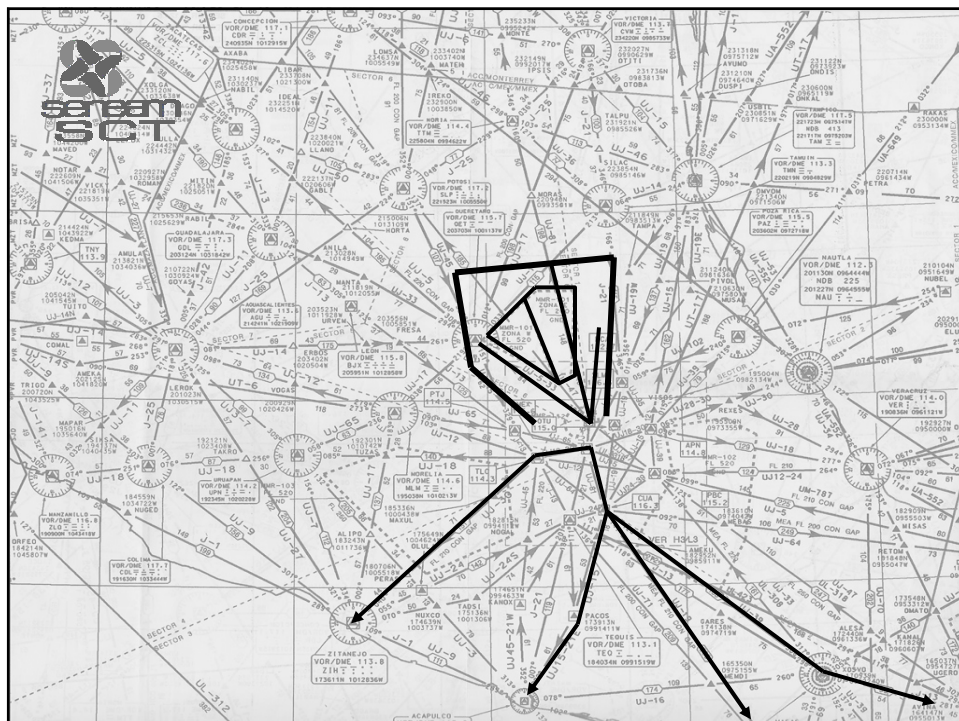
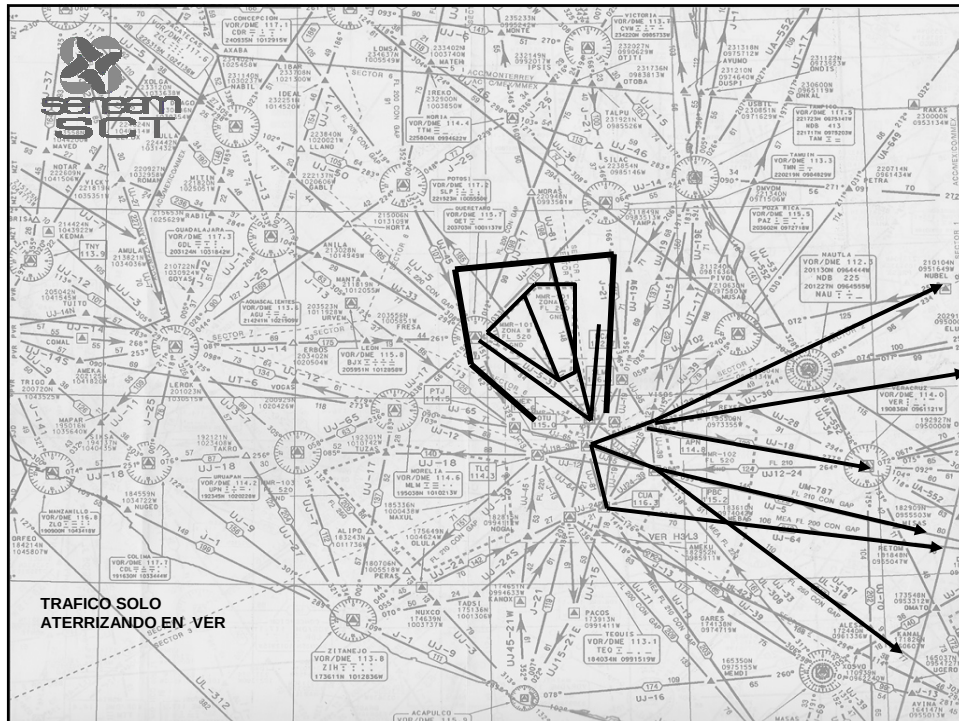
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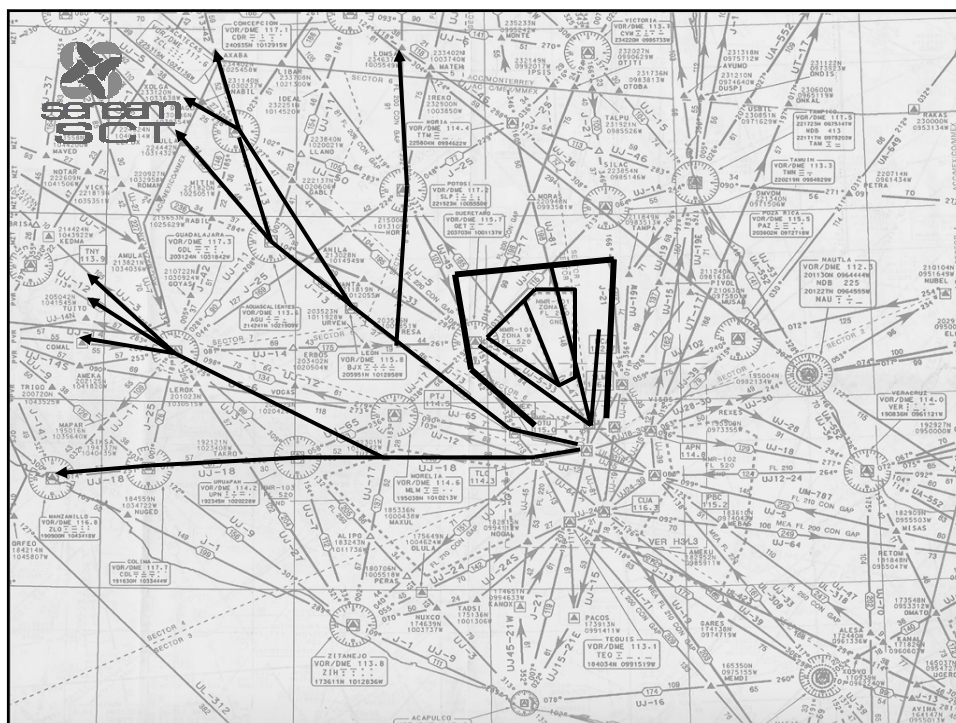
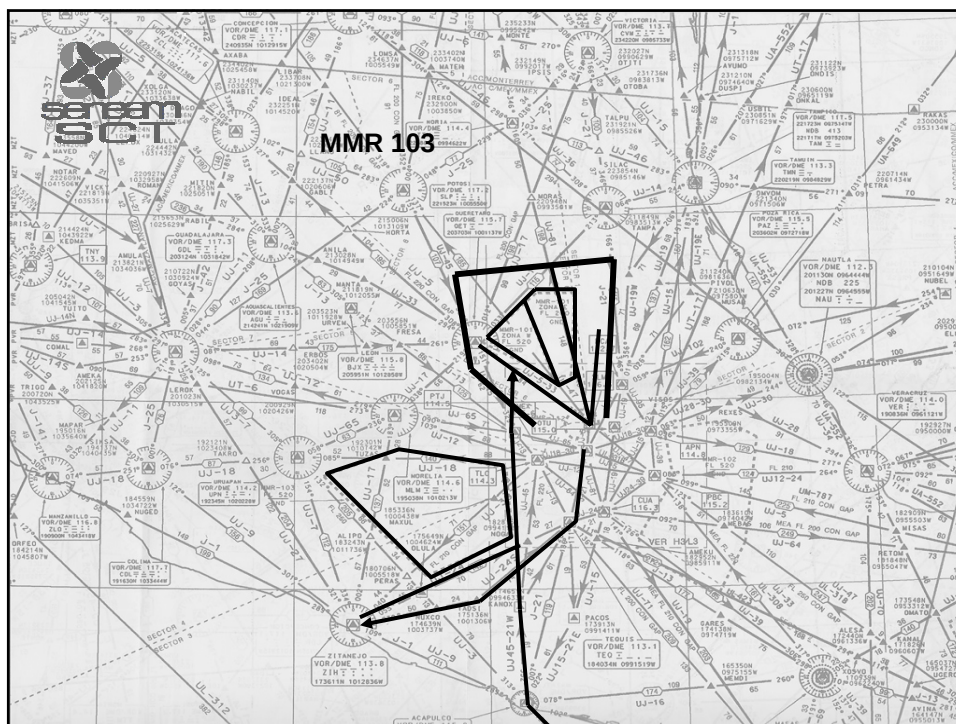


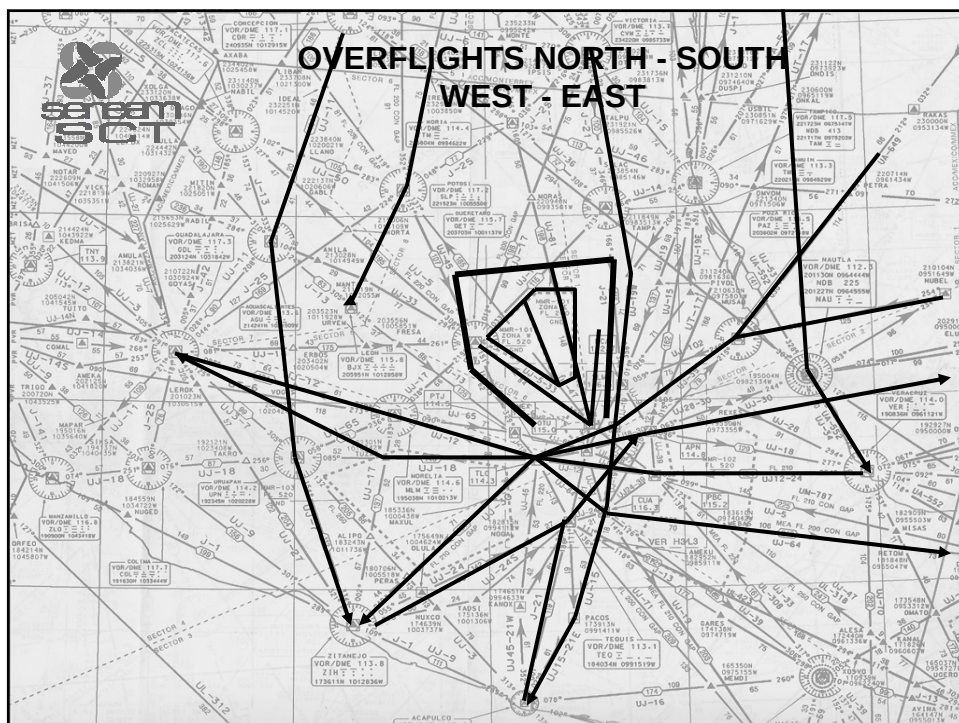
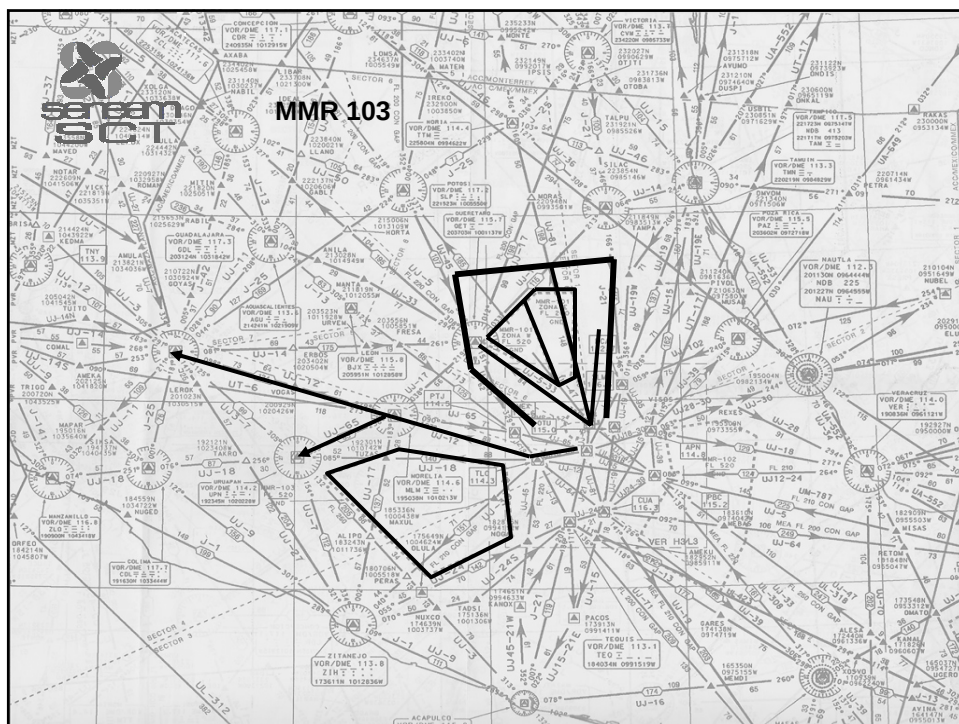


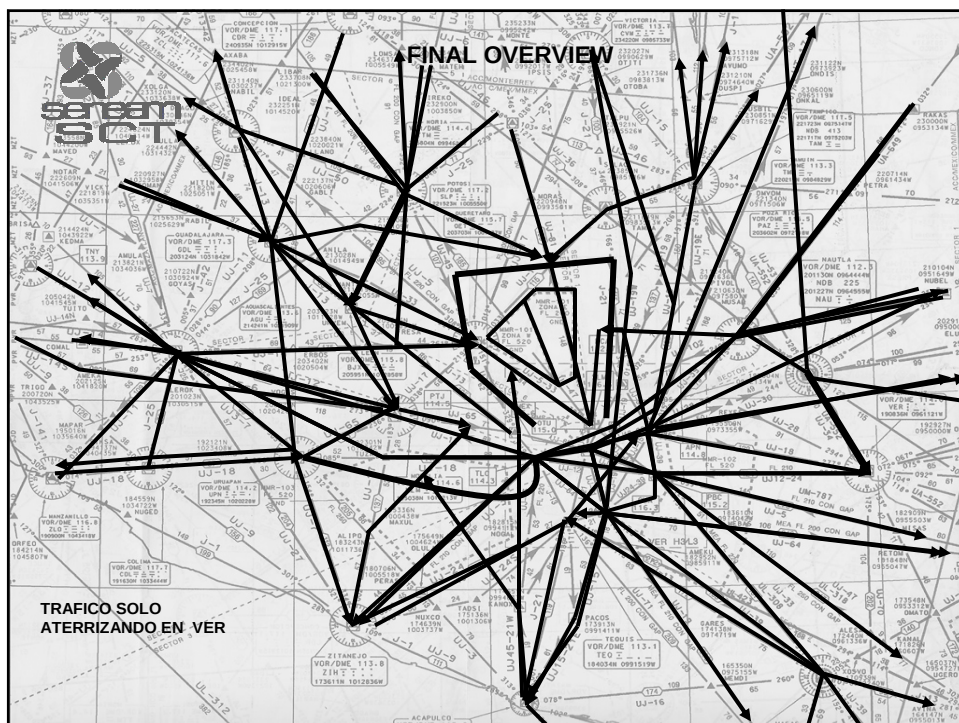
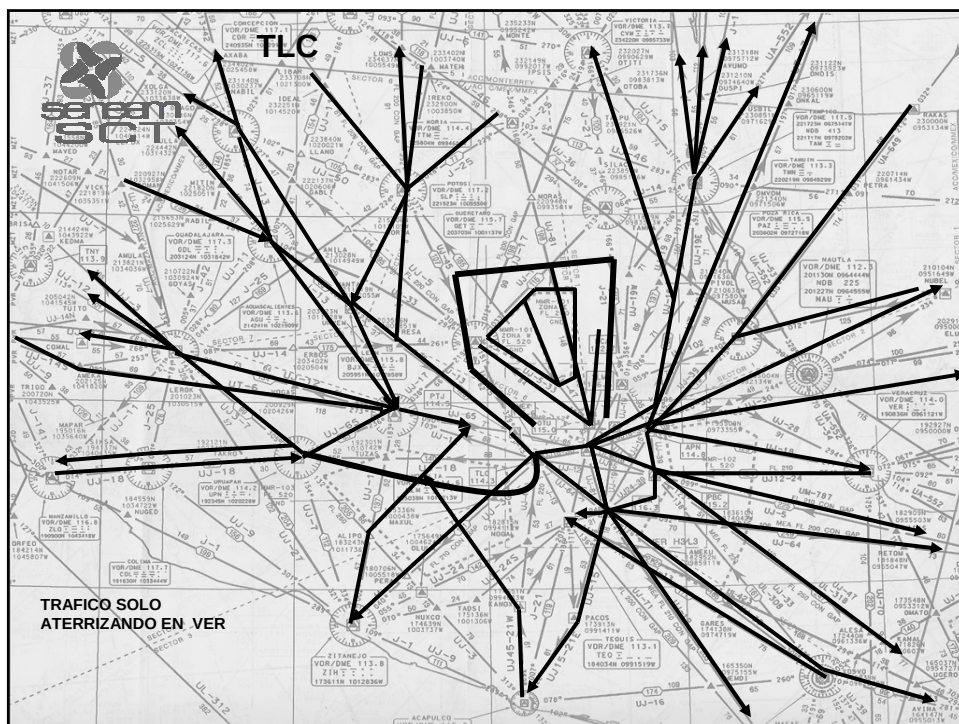














## ***FLOW CONTROL GOAL***



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## ***MEXICO ATFM DEVELOPMENTS***

***THANK YOU .....***

***QUESTIONS, COMMENTS.....***

***AT 13:30 ON THE DEBATE SESSION.***

***frolivaresc@yahoo.com.mx***

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