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SITA OnAir
USA POA Base Frequency

ASRI/AFC Spring Meeting

March, 2015, Melbourne, FL

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Things to consider

1. Background info
2. Precedents
3. USA POA frequency change
4. Conclusions

1

Background information

- Until early 1990s, DSPs operated mostly on unique POA base frequencies:
  ARINC – 131.550, SITA – 131.725 (except Australia 131.550),
  Air Canada – 131.425, AVICOM – 131.450
- Avionics – frequency selection easy to manage with a «flat» list (sequentially scanned by MU)

1

Background information...

- DSP coverage expansion triggers need for new base frequencies
- Initial, new POA base frequency choices:
  ARINC – 131.725 in S. Korea
- Further expansion (circa late 90s) requires new frequencies:
  SITA – 136.850 in North America
  ARINC – 136.925 in Europe
  (in the «unused» VDL band)

1

Background information...

- Base frequency «ambiguity» leads to unintended traffic with non-contracted DSPs
- Avionics developments:
  - positive DSP identification from squitter uplinks
  - active scan list management via ACARS uplinks
  - geographical filtering emerges in mid 90s
- Idea of worldwide POA frequency harmonization proposed in mid 2000s

2

Precedents

- POA base frequency change has been done before
- 2004 - ARINC changed its POA frequency in Europe from 136.925 to 131.825:
  - done over 3 month period
  - service disruption mitigated by duplicated operation on both frequencies at 20 key locations
  - autotuning used to «lead» aircraft to new channel
  - avionics upgrades required

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Precedents...

- 2011 - SITA changed its POA frequency in Russia from 131.550 to 131.725:
  - done over 12 month period
  - duplicated operation on both frequencies at 6 locations to ensure service continuity
  - avionics upgrades required

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USA POA frequency change

- Over 400 radios providing POA service on 3 frequencies in USA
- Over 280 airports with POA service on 136.850 base frequency (some with multiple radios)
- Mixed radio population comprising legacy (2000 vintage) Harris MX9325 and new generation Rohde&Schwartz XU4200
- Many installations with Harris radios require (mechanical) cavity filters (upgrade project in progress)
- Frequency change can be done remotely

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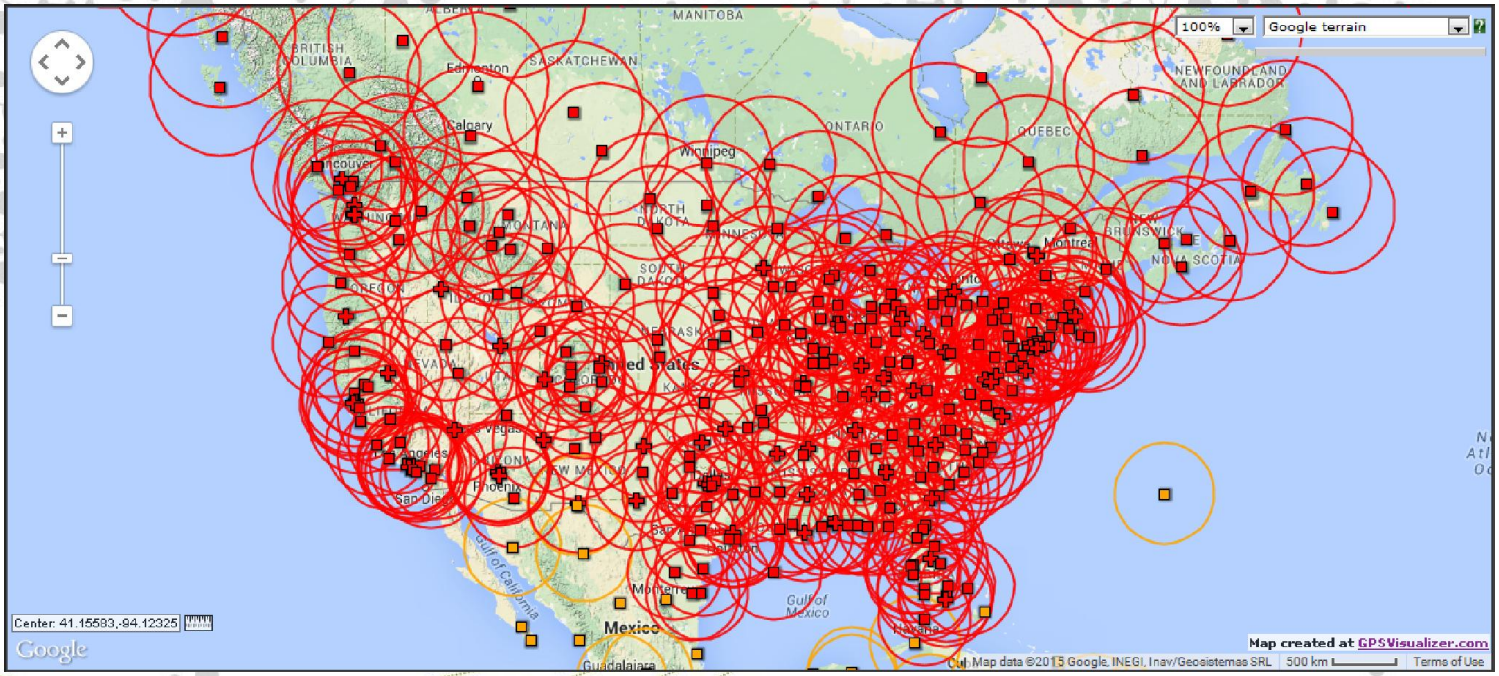
USA POA frequency coverage



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Frequency change logistics

- Notification of airline customers and avionics vendors to start avionics adaptations:
  - preparation and loading of modified coverage maps
  - modification to host applications that send uplinks to manage scan masks
  - impact on avionics/airlines that use «flat» scan lists:
    - 131.725 for SITA service outside USA, not in USA
- Choice of migration approach - most likely similar to ARINC's in Europe:
  - necessity to deploy minimum 50 new stations for duplicate duplicate coverage at key airports

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Frequency change logistics...

- Cost of service duplication at key airports:
  - over $500K capex for duplicate radios deployments
  - $ license fees
  - $ installation costs
  - $ network connectivity charges
  - $ project management and supervision

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Frequency change logistics...

- Impact on traffic handling:
  - USA and Latin America POA coverage would overlap
  - USA ACARS traffic and Latin America ACARS traffic may have to be handled by different processors (similar to FAA requirements for AOA traffic handling)
  - traffic from aircraft in overlap areas would be handled by two processors -> risk of duplicate message reception by airline host

3

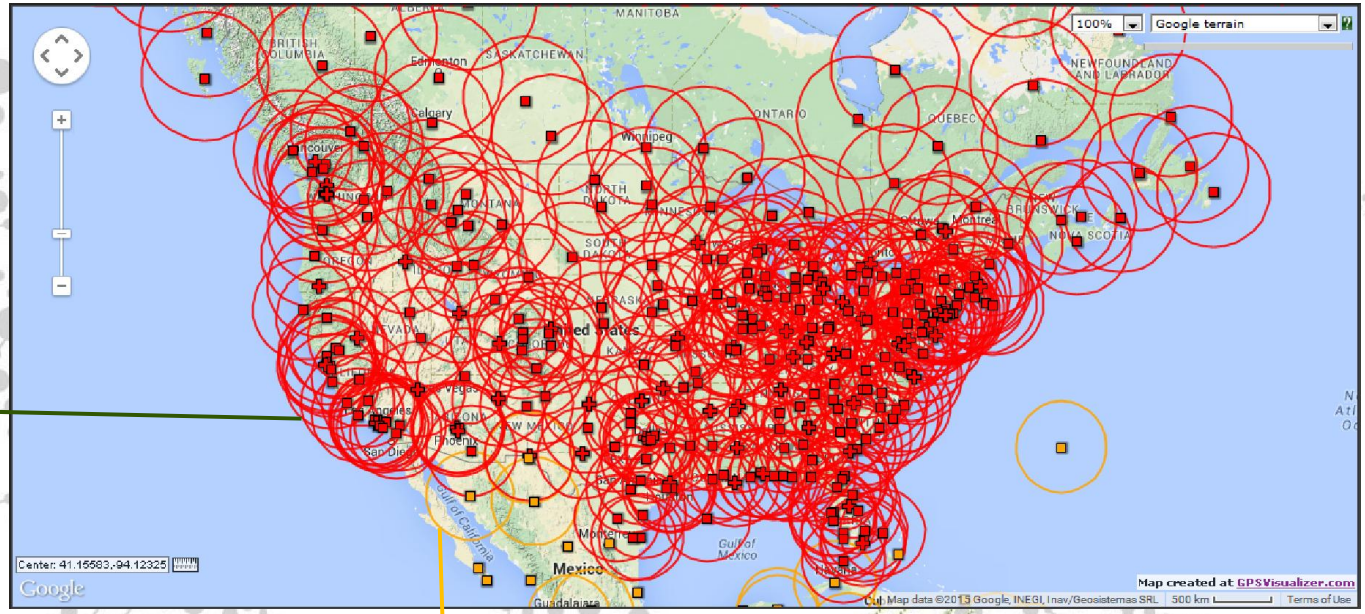
USA ACARS Processor

Network

Airline host

Network

SITA ACARS Processor



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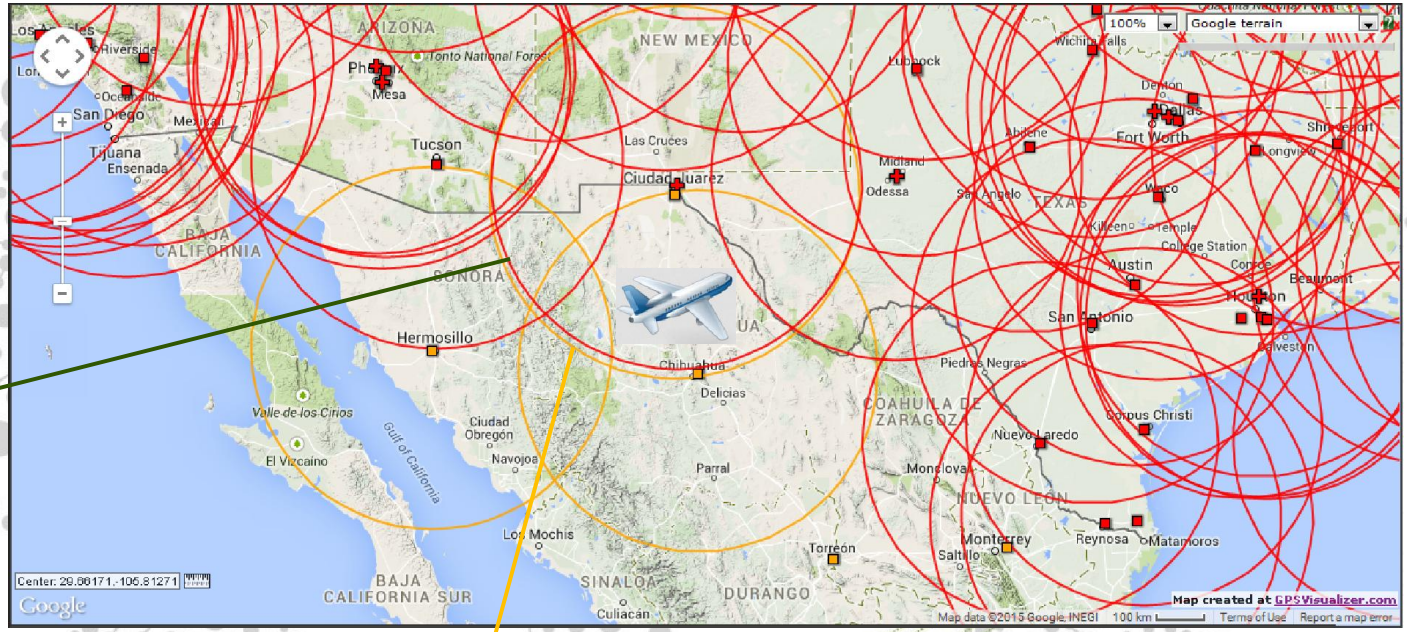
USA ACARS Processor

Network

Airline host

Network

SITA ACARS Processor



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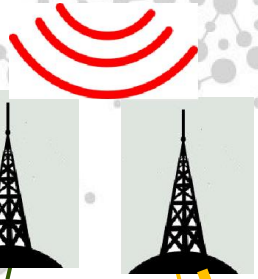

USA and Latin America stations with overlapping coverage on 131.725

USA ACARS Processor

SITA ACARS Processor

Network

Airline host

Same downlink received twice by the airline host

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4 Conclusions

- Change of ACARS POA base frequency is feasible
- Steps required to mitigate service disruptions are costly and require sufficient time to be implemented
- A «forced» migration from 136.850 to 131.725 would have significant impact on SITA's business in USA
- An «organic» migration relying on deployment of 131.725 as a terminal frequency service could provide the necessary foundation for a gradual transition relying on duplicate coverage

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