



# **Classic Aero - FANS Satcom Improvements Team**

**ISPACG/22 FIT/15**

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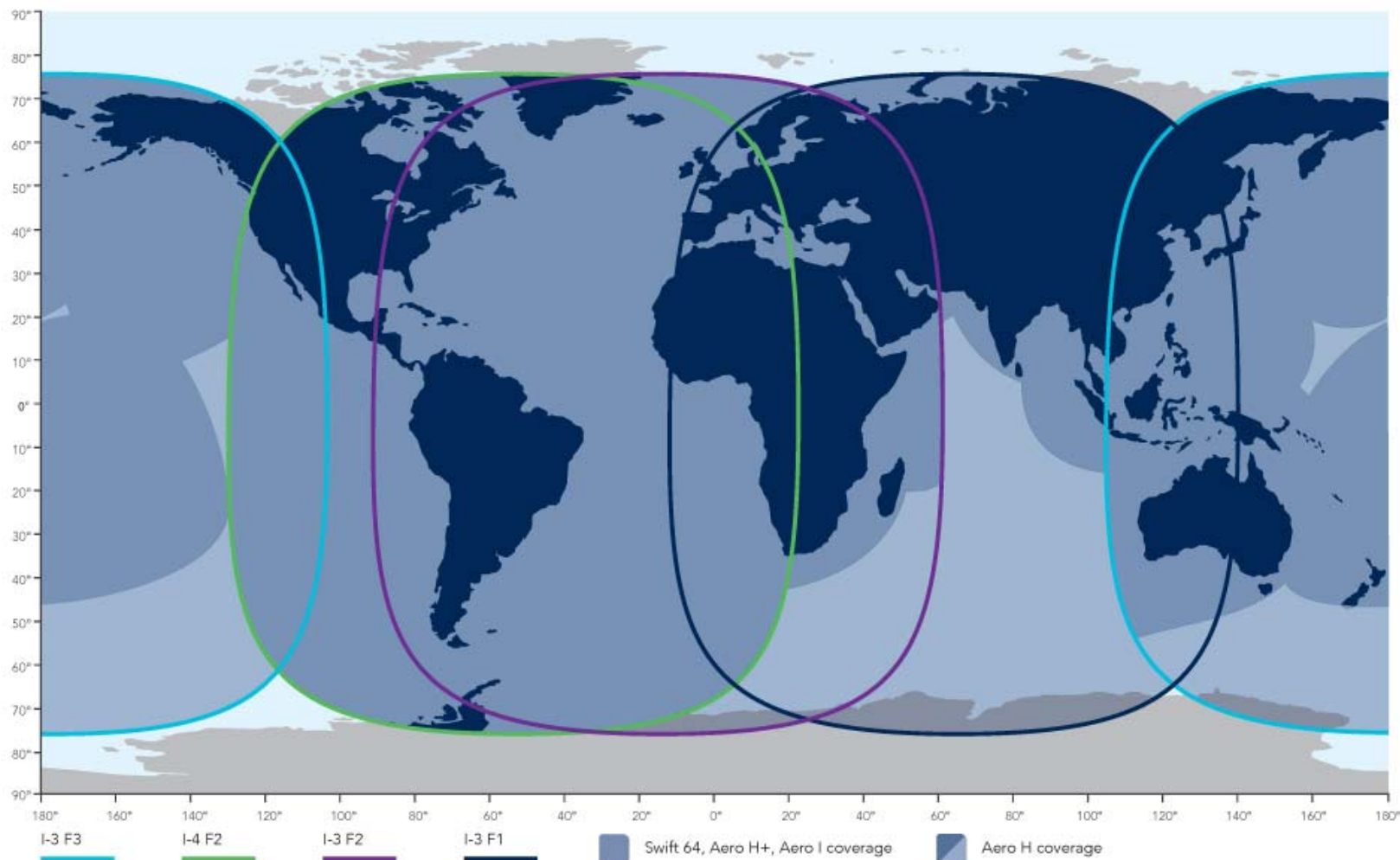
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# FANS Satcom Improvement Team (re-cap)

- ➔ In 2007 Inmarsat initiated formation of a stakeholder group to investigate, propose and implement improvements to the overall Classic aero datalink system
- ➔ Primarily in support of the required communications performance standards for more advanced Air Traffic Service (ATS) applications i.e. 30 by 30nm separation standards
- ➔ ATSP, airline, airframer, AES & GES manufacturer, ICAO , IATA, DP and SP representation
- ➔ Quarterly meetings, three to-date;
  - May 30<sup>th</sup> / 31<sup>st</sup> 2007 Inmarsat, London
  - Oct 3<sup>rd</sup> /4<sup>th</sup> 2007 ICAO Offices, Paris
  - Jan 23<sup>rd</sup> / 24<sup>th</sup> 2008 Boeing, Seattle
- ➔ October meeting held in parallel with ICAO Technical and Institutional Groups of the Special NAT Systems Planning Group (NATSPG)
- ➔ Focuses on improving system availability and recovery times in event of any communications failures

# Swift 64 and classic aeronautical services coverage



The map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service.  
The availability of service at the edge of coverage areas fluctuates depending on various conditions.  
Swift 64 and classic aeronautical coverage April 2007

# Datalink service provision (2008)

	<b>LESO</b>	<b>CSP</b>	<b>AOR-E</b>	<b>AOR-W</b>	<b>POR</b>	<b>IOR</b>
<b>Eik</b>	Vizada	Arinc	X	X		X
<b>Santa Paula</b>	Vizada	Arinc			X	
<b>Aussaguel</b>	Vizada	SITA	X	X		
<b>Perth</b>	Stratos	SITA			X	X

- The above table presents the intended state of service provision following Southbury closure (planned to occur on 27<sup>th</sup> March 2008) and before implementation of additional new Inmarsat GESs - which will operate over the I4 satellites.

# Service improvements – short term

## Additional log-on channels

- ➔ 3 Rsmc channels (asymmetric loading) implemented in all CN94 stations

## House-keeping

- ➔ Some older pre-H+ software builds have 'Permanent Log-on reject' bug - SBs now available (please contact Honeywell)
- ➔ Campaign to move aircraft to the higher speed data channels - ongoing

## Operations

- ➔ Direct contact between Inmarsat NOC and SITA/Arinc NOC in event of a major satellite outage/contingency operations
- ➔ Quarterly contingency rehearsals (service providers involved):
  - AOR(E) Oct 07,
  - IOR Jan 08

## Ground Network

- ➔ CSP improvement programme

# Medium and Long Term improvements

## Monitoring:

- ➔ Expand use of Inmarsat Signal Unit (SU) analysis tools to DPs/ SPs
  - Demos of data capture, analysis and graphical plotting tools given to DPs and SPs ✓
  - Internal approval for necessary development work ✓
  - Commercial discussion beginning ✓

## Log-on, new algorithm proposed (backwards compatible) :

- ➔ Key features:
  - AES able to log on to any R-Ch that the GES has
  - System table broadcasts R-Ch frequencies and bit rate and corresponding P-Channel frequencies and bit rate
  - Flight ID not sent – hence log on is 1 SU/aircraft rather than 2
  - ‘Exponential back off algorithm for R-Ch log on’ changed, including delay parameter sent over network

# Change proposals

<p><b>CP95 (SDM administrative ) – nearly complete</b>          - SDM to reflect the implemented CN94 compliant GES</p>	<p>Administrative</p>
<p><b>CP96 (air interface change) – in detailed definition</b>          - Change to log on process to allow faster ‘system recovery time’ after a GES failure          - Explicit marking of T-Channel superframe          - Provision of terminal manufacturer and software build info in Log On Signal Unit          - Increase the AES ‘loss of P-Channel timer’ from 10 to 30(tbc) seconds</p> <p>Rockwell Collins have endorsed proposal and offered an FOC release of an SB pending CP96 finalization and GES implementation</p>	<p>Service enhancement</p>
<p><b>CP97 (satellite and services SU) - finalized</b>          - Changes to system table to announce services available from each series of satellites</p>	<p>System management enhancement</p>
<p><b>CP98 (support of max. 64 satellites) - finalized</b>          - SDM improved to explicitly describe the need for support of up to 64 satellites in the global system table</p>	<p>System management enhancement</p>



# 2007 – ‘close up’

- ➔ (Jan 10<sup>th</sup> AOR(W) transition to use of 19 spots for voice communication)
- ➔ Aussaguel (CN94) upgrade complete 28<sup>th</sup> March
- ➔ Perth (CN94) upgraded 18<sup>th</sup> April
- ➔ 29<sup>th</sup> May -1st June –  
1st FANS SIT & 2nd Classic Aero stakeholder consultation group
- ➔ 3<sup>rd</sup> & 5<sup>th</sup> July – RFP for Classic Service provision/ Classic GES equipment over the I4s released
- ➔ (May - August – Successful Trials of Satcom Voice for Routine ATS in the NAT)
- ➔ 1st – 3rd Oct –  
2nd FANS SIT/Special ICAO NAT SPG meeting (Tech & Institutional)
- ➔ Eik (CN94) upgrade complete 4<sup>th</sup> Oct
- ➔ (22<sup>nd</sup> Oct Commercial Service Intoduction SwiftBroadband)
- ➔ Santa Paula (CN94) upgrade complete 8<sup>th</sup> Nov
- ➔ December - Inmarsat selection of supplier for Classic Aero GESs for repositioned I4 satellites
- ➔ February 08 – SED (teamed with SPCI) contracted to deliver I4 GESs for the 3 additional ORs



# Summary

- ➔ Many system changes to improve reliability and speed up log-on action implemented, others under detailed definition
- ➔ Change Proposal for Air Interface change (CP96) – concepts defined, detailed definition follows (by April 08)
- ➔ Significant step towards enhancing the system for advanced Air Traffic Service applications
- ➔ FANS SIT/4 meets in May 08, USA CA

# Comments and questions