Twenty Third Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/23)

FANS Interoperability Team Meeting (FIT/16)
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Agenda 8: INMARSAT SATCOM Performance

FAA PERSPECTIVES ON FSIT PROPOSED SOLUTIONS

(Presented by the Federal Aviation Administration)

SUMMARY

This paper provides FAA perspectives on the FANS Satellite Improvement Team's (FSIT's) proposed solution to address degrading performance of Aero Classic satellite services on the Inmarsat-3 (I3) network.

1.   INTRODUCTION – FANS Satellite Improvement Team

1.1   The FANS Satellite Improvement Team (FSIT) is led by the Inmarsat satellite company and comprises members from Inmarsat's partners, aircraft operators, aircraft manufacturers, equipment suppliers, communication service providers (CSPs), air navigation service providers (ANSPs), and other interested stakeholders.

1.2   Since May 2007, FSIT has been assessing solutions to address degrading performance of the Aero Classic satellite services owing to increased use of the Inmarsat-3 (I3) aeronautical network, aging components in the ground-earth stations (GESs), and the closure of a number of GESs that were supporting Aero backup as secondary functions. FSIT held its 5th meeting, 20-21 November 2008, in London.

1.3   FSIT has proposed a solution to improve the I3 network that will require changes to the ground infrastructure and the aircraft's satellite data unit (SDU). FSIT estimates that the solution costs will range between U.S. $15-20M, depending on costs to certify the SDU changes and to retrofit the existing fleet. Inmarsat has clearly stated that the aviation community will need to pay these costs. However, it has not yet been possible to determine source of the funds or how the monies (investment and service usage) would be collected.

1.4   It is noted that the I3 network has an expected service life through about 2017, and the FSIT has not yet assessed any solutions using the Inmarsat-4 (I4) network. The I4 network is currently being deployed and will eventually supersede the I3 network. Through this transition, Inmarsat will need to allocate spectrum for the Aero Classic services between the I3 and the I4 networks. Inmarsat has indicated that this allocation will be based on retaining the I3 network as the primary network, although Inmarsat has also stated that 'control' of which aircraft can use either I3 or I4 satellites for service will be at the 'Service Provider' level.

1.5   At the FSIT/5 meeting, FSIT concluded not to have a future meeting until it could find a legitimate funding source for viable solutions or produce a business plan which could sustain these requirements. Nevertheless, it agreed that the issues affecting service performance need to be resolved to ensure that planning and implementation activities requiring Aero Classic satellite services are not severely curtailed.

2.   DISCUSSION – FAA Perspectives

2.1   The Aero Classic satellite services support a number of air traffic management (ATM) initiatives including reducing separations, increasing airspace capacity, opening up new routes, and providing safer, more efficient and environmentally-friendly operations leading to our Next Generation Air Transportation System (NextGen).

2.2   FSIT possesses the right expertise needed to develop solutions that will improve the Aero Classic satellite services.

2.3   Satellite data services are crucial to the ATM initiatives and measurements of current performance indicate improvements are needed. Additionally, to assess the viability of the FSIT solution:

   a)   FSIT needs to determine that the proposed I3 network solution will improve the service enough to bring it into compliance with global performance specifications as currently drafted in the global operational data link document (GOLD); and

   b)   The aviation community will need confidence that Inmarsat will maintain an acceptable level of performance for Aero Classic Services throughout a defined service life.

2.4   The FAA has also raised some questions for consideration.

   a)   Is maintaining the I3 network the best option when considering the business models and planned initiatives from the users' perspective? FSIT needs to commence assessing other solutions taking into consideration the Aero Classic satellite services on the I4 network, the terms for allocating spectrum, and the estimated user costs for each alternative.

b) Given the lead time that is anticipated to determine funding sources, collect monies, implement the proposed solution, and upgrade the SDUs in the entire fleet, will there be enough service life remaining on the I3 network (through 2017?) to recover the investment?

c) Are there other viable solutions in a broader context when considering different technologies? At ISPACG/22 FIT/15, the FAA and Airservices Australia briefed the group on the work currently underway within the Performance-Based Operations Aviation Rulemaking Committee's Communication Working Group (PARC CWG), which is investigating the use of the Iridium satellite Short Burst Data (SBD) services for FANS 1/A data link applications. Also, the FSIT may be considering solutions taking into consideration SwiftBroadband (SBB) services on the I4 network. However, safety services are not expected on SBB before 2013, and even then, will not be backwards compatible with non-SBB aircraft.

d) Will the aviation community need new performance specifications to support planned "longer term" operational implementation initiatives? RCP 240 is intended to support existing standards for reducing separations; and RCP 400 is intended to support communication means using alternative technologies to traditional high frequency (HF) voice. However, we may need new standards to reduce separations further or for other operational capabilities that would require "more stringent" RCP specifications.

2.5 The FAA has begun an independent assessment to validate FSIT solutions against business and operational needs

3.   ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Note the information in this paper;

b) Support the schedule for completing the GOLD this year. The GOLD will provide the global performance specifications, and associated data collection and monitoring requirements, for satellite communication services that are needed for current and planned operational initiatives; and

c) Encourage South-Pacific States to begin investigating the potential impact on satellite communication services resulting from planning and implementation initiatives that satisfy their business and operational needs.