

**Twenty Sixth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/26)**

Nineteenth Meeting of the FANS Interoperability Team (FIT/19)

Nadi, Fiji, 28-29 February 2012

Agenda Item 4: Working Papers

Operational use of FANS 1/A over Iridium

Presented by the Federal Aviation Administration

Summary

This paper provides the FAA's response to the Performance-Based Operations Aviation Rulemaking Committee (PARC), regarding the Future Air Navigation System 1A (FANS 1/A) over Iridium (FOI) and Performance-Based Concept Recommendations, dated 16 September 2010. It invites the meeting to acknowledge FOI as a viable means for conducting air traffic service (ATS) communications, and that FOI aircraft are eligible for data link operations in the Pacific Region.

1 INTRODUCTION

- 1.1 On 17 September 2010, the PARC submitted its report concerning *FANS 1/A over Iridium (FOI) and Performance-Based Concept Recommendations*, (**ISPACG/25 FIT/18 IP/7** refers).
- 1.2 On 27 June 2011, the FAA responded to the PARC, agreeing with the recommendations in the report. (**Attachment A** refers to this)

2 DISCUSSION

- 2.1 A FANS 1/A aircraft, per the Global Operational Data Link Document (GOLD), is an aircraft with a data link system that has been certified in accordance with the requirements specified in RTCA DO-258A/EUROCAE ED-100A, Interoperability



Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A INTEROP Standard), or previous version.

- 2.2 DO-258A/ED-100A includes provisions for use of very high frequency (VHF), satellite and high frequency (HF) sub-networks that are compatible with the aircraft communication and reporting system (ACARS) network. However, it does not require or specify any specific sub-network(s) that an aircraft must use for FANS 1/A operations.
- 2.3 Currently, throughout the world, operators with FANS 1/A aircraft use controller-pilot data link communications (CPDLC) and automatic dependent surveillance – contract (ADS-C) services using a variety of sub-networks, including VHF (Mode 0/A and Mode 2), Inmarsat Classic Aero over the I3 and I4 satellites, Iridium short burst data (SBD), and HF data link (HFDL).
- 2.4 The FAA certifies FANS 1/A aircraft in accordance with Advisory Circular (AC) 20-140A, Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS), and authorizes operational use of data link in accordance with AC 120-70B, Operational Authorization Process for Use of Data Link Communication System, and FAA Order 8900.1, Flight Standards Information Management System (FSIMS). For FANS 1/A aircraft, these FAA documents recognize DO-258A/ED-100A or previous version, as acceptable means of compliance, which is consistent with the GOLD definition.
- 2.5 Further, these FAA documents recognize a number of sub-networks and associated standards as acceptable means of compliance for FANS 1/A aircraft, including Iridium’s SBD services compliant with RTCA DO-262A, Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS), Normative Appendix, section 2.
- 2.6 The FAA have certified FANS 1/A aircraft that use the Iridium SBD sub-network, i.e., FOI aircraft, in accordance with AC 20-140A, and have authorized operators to use these aircraft, in accordance with AC 120-70B. Other appropriate authorities have also issued design approvals and authorized operational use of FOI aircraft.
- 2.7 The FOI equipage rate is expected to increase dramatically. The FAA and other appropriate authorities are continuing to certify FOI installations and authorize operations for FOI use. The FAA is aware of a number of operators that already have existing programs to install FOI equipment on over 100 aircraft, and plans to use CPDLC and ADS-C services with these aircraft by 2013.
- 2.8 The FAA Technical Center continues to monitor CPDLC and ADS-C data link operations within New York, Anchorage and Oakland flight information regions (FIRs), per the GOLD, regardless of sub-network media being used, and the Flight Standards Service is planning to establish a system with operators to correct any performance deficiencies detected from this monitoring.

- 2.9 The PARC recommendations regarding the performance-based concept for communications and surveillance are consistent with the GOLD and regional plans to implement a performance-based framework for communications and surveillance, such as the *NAT RCP and ADS-C Surveillance Performance Based Operations Implementation Plan*, approved by the NAT Systems Planning Group in June 2011 (Refer to ISPACG/26 WP on RCP and RSP planning).
- 2.10 In accordance with the ICAO Standards and Recommended Practices, Regional Supplementary Procedures (Doc 7030), GOLD and other ICAO guidance material (e.g., ICAO Doc 9925), FOI is a viable means for conducting ATS communications and FOI aircraft are eligible for CPDLC and ADS-C operations in the Pacific Region.

3 ACTION BY THE MEETING

- 3.1 The Meeting is invited to:
- a) Note the information in this paper; and
 - b) Accept FOI as a viable means for conducting ATS communications, and that FOI aircraft are eligible for CPDLC and ADS-C operations in the South Pacific.



Attachment A. FAA Response to PARC’s report, “FANS 1/A over Iridium (FOI) and Performance-Based Concept Recommendations”



U.S. Department
of Transportation
**Federal Aviation
Administration**

June 27, 2011

Mr. Dave Nakamura
The Boeing Company
CNS Technical Standards and Requirements
P.O. Box 3707, MS 07-25
Seattle, WA 98124

Dear Mr. Nakamura:

Thank you for the Performance-Based Aviation Rulemaking Committee (PARC) recommendations on future air navigation system (FANS 1/A) over Iridium (FOI) operations and the performance-based concept for communications and surveillance. I commend the PARC Communications Working Group (CWG) for a very comprehensive and credible report and have coordinated my response with Air Traffic Organization (ATO). We agree with these recommendations and will work with PARC toward implementation.

I am pleased with PARC’s progress in working with the international community to harmonize data link operations, procedures, and International Civil Aviation Organization (ICAO) standards, as demonstrated by the Global Operational Data Link Document (GOLD), issued in June 2010. The Federal Aviation Administration (FAA) accepted the GOLD for coordinating global guidance material for data link implementation and operations in its oceanic airspace and in the National Airspace System (NAS). The FAA already refers to the GOLD in advisory circular (AC) 20-140A *Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS)* and AC 120-70B *Operational Authorization Process for Use of Data Link Communication System*, issued April and August 2010, respectively.

With proven benefits in operational efficiency, environmental impact, and safety, the FAA has identified FANS 1/A as an enabler for NextGen. It is already an important component in FAA programs such as the Asia and South Pacific initiative to reduce emissions (ASPIRE) and the Atlantic interoperability initiative to reduce emissions (AIRE). The FAA is also planning to support FANS 1/A+ in its domestic data communications program. The FAA agrees FOI will promote FANS 1/A expansion, and accepts FOI as a viable means for air traffic service (ATS) communications, particularly in accordance with performance specifications for reduced oceanic separations based on automatic dependent surveillance – contract (ADS-C).



FAA aircraft certification and flight standards offices will continue to certify aircraft with FOI installations and issue operational authorizations for data link operations per existing policies and guidance material. The FAA Technical Center will continue to monitor data link operations per the GOLD and the Flight Standards Service will establish a system with operators to correct any performance deficiencies detected from this monitoring. The ATO will take appropriate action to remove restrictions on FOI operations in its oceanic airspace. The FAA will also advocate removal of any restrictions imposed by other air navigation service providers. In the longer term, the FAA will work with PARC to identify areas where the FAA can improve its policies and guidance material to ensure their standard application regardless of technology.

The FAA recognizes the term “SATCOM” generally means satellite communications for the ICAO aeronautical mobile satellite (route) service. The FAA will review its policies and guidance material to ensure this term is not limited to any particular satellite technology such as Inmarsat Classic Aero. However, with the performance-based concept, any data link technology for ATS communications will need to conform to GOLD performance specifications as prescribed by airspace requirements documents.

The FAA agrees that the performance-based concept for communications and surveillance will leverage existing capability. Foremost, the FAA sees that the concept will ensure safe use of communications and surveillance capability as we increase reduced ADS-C-based separations. This is important during the NextGen transition.

The FAA accepts PARC’s recommendation to implement a performance-based framework for Required Communication Performance (RCP) and Required Surveillance Performance (RSP) specifications for oceanic and remote operations. The FAA has already included provisions for the framework in AC 20-140A, *Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services* and AC 120-70B, *Operational Authorization Process for Use of Data Link Communication System*. The FAA recognizes more work needs to be done and will work with PARC to establish priorities and timelines to fully implement the performance-based framework.

The FAA will advocate global implementation of the performance-based framework within ICAO and regional ATS coordinating groups. The ICAO Regions will need to prescribe RCP/RSP specifications in airspace requirements documents, such as ICAO Doc 7030, Regional Supplementary Procedures, to ensure operator eligibility and flight plan filing requirements for seamless operations, performance, interoperability and standardization.

Thank you again for all of the PARC’s hard work.

Sincerely,

/s/

Ms. Margaret Gilligan
Associate Administrator for Aviation Safety

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