**The Twenty-Second Meeting of the
Informal South Pacific ATS Coordinating Group (ISPACG/22)
FANS Interoperability Team Meeting (FIT/15)**

Papeete, Tahiti, 12-14 March 2008

Agenda Item 5: FOM System Performance Requirements

Preliminary Review of FANS Operations Manual

(Presented by the Federal Aviation Administration)

SUMMARY

This working paper provides the results of a preliminary review of the FANS Operations Manual (FOM) against the new standard, RTCA DO-306/EUROCAE ED-122, Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace, dated 11 October 2007. This working paper suggests that the FIT recommend to the ISPACG that the data link working group (DWG) use the results of this preliminary review to address potential changes to the FOM. It also recommends that the DWG consider changes so that the FOM can be globally adopted.

1   Introduction

1.1   The FANS Operations Manual (FOM) has been around for long time and has been useful in the implementation of FANS 1/A throughout the Asia-Pacific Region.

1.2   A preliminary review was conducted by comparing the FOM with DO-306/ED-122 and the results are provided in the Attachment to this working paper.

2   Recommendation

2.1   The meeting is invited to:

a)   Note the information provided in this working paper; and

b)   Recommend to the ISPACG that the Data Link Working Group use the results of this preliminary review to:

1)   Align the FOM with DO-306/ED-122.

2)   Make any other changes that would promote global adoption of the FOM.

-   **END –**

Results of Preliminary Review of FOM against RTCA DO-306/EUROCAE ED-122

Ref	Subject: Reason for change	Description of proposal	RFC #
3,2	Personnel Licensing and Training As a minimum, a data link authorization is required for US and 129 operators, per FAA AC 120-70A. Even for trials, the operator should obtain appropriate authorizations from the responsible organizations as may be required by the State. As it's written now, the first paragraph doesn't say anything about Licensing (or authorization). Paragraph 7(a)1 of AC 120-70A states, "Prior to using the system, the operator must request a revision to their Operations Specifications to ensure that the system is used in accordance with international standards and requirements and in a manner that is acceptable to the FAA. A revision to the Operations Specifications includes specific authorizations, training and maintenance programs, manuals, operational procedures, MELs, and other such areas necessary for safe and effective use of data link communications. In addition, the service must be capable of meeting international standards for a specific route."	Include reference to FAA AC 120-70a (or equivalent), which requires operators to obtain a data link authorization. The authorization addresses flight crew training and qualification, maintenance, MEL, aircraft equipment has been approved for the intended use, e.g., RCP 240 or RCP 400 operations, user modifiable software , e.g., ORT, is properly configured, service agreements with CSP are appropriate for the intended use, and procedures are in place to provide problem reports and data to the central reporting/monitoring agencies. (See also FIT/15 WP-09).	

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3.3	References Missing reference.	Add RTCA DO-306/EUROCAE ED-122, Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace, dated October 11, 2007 For domains, CPDLC, ADS-C, AFN, ?FMS WPR? (Note I didn't find this column very helpful) Suggest to delete the column.	
3.4	System performance criteria Standard now available	replace all of 3.4 with reference to DO-306/ED-122. Add in additional service availability requirement and outage indication delay requirement. In addition it may be desirable to insert extractions of DO-306/ED-122 to emphasize criteria used for monitoring. See FIT/15 WP 04 and FIT/15 WP 07.	
3.5 3.5.1 3.5.2 3.5.3 3.5.4	ATC System Validation Standard now available	DO-306/ED-122 includes CNS/ATM system requirements and are allocated to the Operator, aircraft communication service provider, and the ATC system and procedures. See Annex B of DO-306/ED-122.	

Ref	Subject: Reason for change	Description of proposal	RFC #
3.5.1	ATC System Validation Standard now available	For system safety, refer also to the FIT/15 WP/2 from Airbus. DO-306/ED-122 includes an operational safety assessment, which identifies operational hazards (i.e., failure conditions) and assesses their effect on operations. The hazards are classified according the operational effect and safety objectives are established from the hazard class. Risk mitigation strategies commensurate with the hazard class are developed and safety requirements are derived from those risk mitigation strategies. DO-306/ED-122 should provide the basis for system safety assessments that are conducted within each specific region and/or State, and augmented, as necessary, to fulfill a State's requirements DO-306/ED-122 satisfies the items a) through d) listed in para 3.5.1 of the FOM.	
3.5.2	ATC System Validation Standard now available	Paragraph 3.5.2 whould be expanded to include operational requirements as well as technical requirements to show that operational, safety, performance, and interoperability requirements are met per DO-306/ED-122.	
3.5.3	ATC System Validation Standard now available	Paragraph 3.5.3 would need to be expanded to include assessment against the ATS functions, data link services, and data link application described in DO-306/ED-122 and address safety and or performance requirements and/or assumptions that are affected by procedures, e.g., flight crew response times to CPDLC clearances and instructions, and awareness of performance degradations below an RCP type due to failure, e.g., failure causes switch from SATCOM to HFDL in 30/30 separation.	

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3.5.4	ATC System Integrity Standard now available	Paragraph 3.5.4 is covered by operational safety assessments, initial qualification of various parts of the end-to-end system in accordance with standards, such as DO-306/ED-122 and DO-258A/ED-100A, end-to-end testing/trials, and procedures for on-going operational monitoring, alerting, analysis and continuous improvement, as needed, to bring the system into compliance with the standards.	

3.6	System Monitoring	Assess for changes per FIT/15 WP 04. Include statement that States should include in their AIPs the monitoring and reporting requirements, e.g., availability of data, for operators to support these activities. (See also FIT/15 WP 09 and comments for paragraph 3.2 of the FOM). Monitoring standards should include reporting requirements for ANSPs, CSPs and operators to the central reporting agency. ANSPs should provide on a per tail number basis
		
		a) The ANSPs provides statistically sufficient data sample of CPDLC transactions (only those requiring W/U response) and ADS-C position reports.
		
		    1) For each CPDLC data point, the data will include aircraft registration, time CPDLC uplink sent, time MAS received, time indicated in timestamp of downlink W/U response message, time response message received by the center's system.
		
		    2) For each ADS-C data point, the data will include tail number, time message sent by the aircraft and the time message received by the center. (messages supposed to be delivered bur weren't need	

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		to be included in the data). b) The communication service provider provides latency for ALL (including those initiated but never delivered) messages in the data sample times between center and Iridium gateway, and between Iridium gateway and aircraft. c) The aircraft operators, controllers, communication service providers, or any participant should report any anomalies or potential problems and provide data, as necessary to support investigation and resolution.	
5.9	review with DO-306 and replace with reference and identify deviations with substantiation.	review with DO-306 and replace with reference and identify deviations with substantiation. See Annex A of DO-306/ED-122.	
5.10	review with DO-306 and replace with reference and identify deviations with substantiation.	review with DO-306 and replace with reference and identify deviations with substantiation. See Annex A of DO-306/ED-122.	
5.10.5	Use of free text for emergency messages requires closure response of ROGER to the roger free text sent up by the controller.	Use the standard UM3 ROGER response to avoid this and also to be compliant with Doc 4444.	
7.1.4	Use of free text for emergency messages requires closure response of ROGER to the roger free text sent up by the controller.	Use the standard UM3 ROGER response to avoid this and also to be compliant with Doc 4444.	
7.6	General comment to recognize DO-306 weather deviation procedures.	Weather deviation procedures, per DO-306 service description, supplemented as needed.	

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7.3.5	Timely is not defined	Update to include "indication outage delay" requirement to 5 minutes and 10 minutes for RCP 240 and RCP 400, respectively. Move this requirement to be part of the RCP specifications.	
7.5	Consistent use of flight levels, e.g., FL340, FL 340, F340.	DO-306 uses e.g., "FL340" in free text messages. Review whole FOM for consistent use.	
7.6.3	A spurious back on route could have been received when the aircraft is still on a weather deviation	Revise to "A weather deviation clearance remains in effect until either" A "back on route" report is received and a position report (e.g., demand) confirms that the aircraft is back on the cleared route, or …	
8.2	ATS Systems for Anchorage and Oakland need to be updated to reflect ATOP implementation of Ocean21.	Update the table. Suggest to delete the ATS System column. Are all centers listed with the new stakeholders that have been added?	
8.4	List needs to be updated. E.g., 2003 – 4 is long past. The US has since phased in.	UM129 row can be deleted.	

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9	Errors in continental description. DLSG harmonization strategy is to converge and stop further divergence. Current definition and recommendations are to implement a subset of CPDLC messages that is not consistent with the Implementing Rule for data link services in Europe, i.e., Link 2000+ definition.	Suggest to delete text in section 9 and reference to the following standards for definition and requirements. RTCA DO-290/EUROCAE ED-120, Change 1 and Change 2, Continental SPR Standard, for safety and performance requirements for air traffic data link services in continental airspace (for DLIC and CPDLC supporting only ACM, ACL, and AMC services) RTCA DO-280B/EUROCAE ED-110B, ATN B1 INTEROP Standard (for CM and CPDLC supporting ACM, ACL, and AMC services) RTCA DO-305/EUROCAE ED-154, FANS 1/A – ATN INTEROP Standard, for ATN B1 ground systems providing continental data link services to FANS 1/A aircraft	