



FANS Interoperability Team (SOPAC-FIT) 14th Meeting

Auckland, New Zealand, 5-6 March 2007

Agenda Item 4:

System Performance Criteria

(Presented by Airways New Zealand)

SUMMARY

The safety and performance standard for datalink operations in oceanic and remote airspace (Oceanic SPR standard) has been under final review since 12 February 2007. This paper proposes that the incomplete performance criteria contained in the FANS-1/A Operations Manual be aligned with that contained in the Oceanic SPR standard.

1. INTRODUCTION

- 1.1 The Oceanic SPR standard is currently under final review and comment prior to publication. This document defines and allocates the set of minimum requirements for the operational, safety, and performance aspects for implementations of air traffic data link services in oceanic and remote airspace.
- 1.2 The purpose of this working paper is to propose alignment of the System Performance Requirements contained in paragraph 3.4 of the FANS-1/A Operations Manual to those contained in the Oceanic SPR standard.

2. DISCUSSION

- 2.1 The Oceanic SPR standard uses required communication performance (RCP) types to specify operational performance in terms of communication transaction time, continuity, availability, and integrity. The use of RCP types is in accordance with the ICAO guidelines in Annexes 6 and 11, and ICAO Doc 9869 Manual of Required Communication Performance. The standard also provides requirements for surveillance.
- 2.2 The RCP type provides a framework to determine performance requirements for the CNS/ATM system providing communications in the airspace, and the monitoring, indication, and reporting requirements for failures that cause system performance to degrade below that which is required by the separation minima. Application of an RCP type is particularly useful in airspace that provides multiple separation minima depending on aircraft capability and performance, or when communication capabilities use technologies other than traditional technologies, such as third party HF voice communication.

2.3 An operational communication transaction is the process a human uses to send an instruction, clearance, flight information, and/or request, and is completed when that human is confident that the transaction is complete. An RCP type is a label (e.g., RCP 240) that defines a performance standard for operational communication transactions. Each RCP type denotes values for communication transaction time, continuity, availability, and integrity applicable to the most stringent operational communication transaction supporting an ATS function.

Communication transaction time – The maximum time for the completion of the operational communication transaction after which the initiator should revert to an alternative procedure.

Continuity – The probability that an operational communication transaction can be completed within the communication transaction time.

Availability – The probability that an operational communication transaction can be initiated when needed.

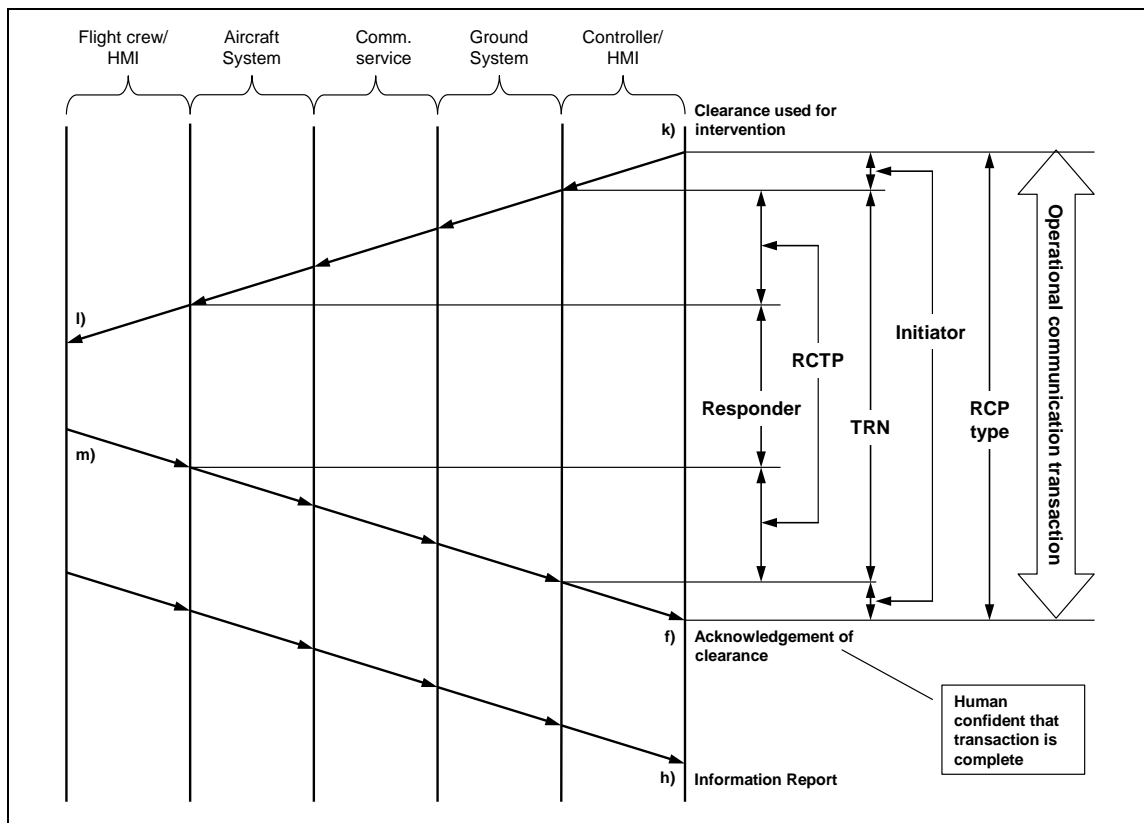
Integrity – The probability of one or more undetected errors in a completed communication transaction.

2.4 The table below is extracted from the SPR standard and shows the intended use for each RCP type with its associated transaction time and continuity, availability, and integrity values.

RCP type	Intended use	Transaction time (ET) (sec)	Continuity (C) (probability/flight hour)	Availability (A) (probability/flight hour)	Integrity (I) (acceptable rate/flight hour)
RCP 240	Normal means of communication for application of 30/30 and 50/50 separation minima	240	0.999	0.999	10 ⁻⁵
RCP 400	Alternative means of communication for application of 30/30 and 50/50 separation minima	400	0.999	0.999	10 ⁻⁵
RCP 400	Normal means of communication for application of 100 NM or 60 NM lateral/15 or 10 minutes longitudinal separation minima	400	0.999	0.999	10 ⁻⁵

2.5 The table below is extracted from the SPR standard and shows the allocations for each RCP type. The figure below the table illustrates the relationship of the RCP time allocations to a time sequence diagram.

RCP type	RCP 240/D		RCP 400/D	
Time Parameter	ET	95%	ET	95%
Time Value	240	210	400	350
RCP Time Allocations				
Initiator	30	30	30	30
TRN	210	180	370	320
TRN Time Allocations				
Responder	60	60	60	60
RCTP	150	120	310	260
RCTP Time Allocation				
Aircraft	15	10	15	10
Communication service	120	100	280	240
ATS unit	15	10	15	10



3. RECOMMENDATION

3.1 This working paper recommends that:

- (i) The FIT agree the need to update the FOM system performance criteria.
- (ii) That the FIT agree that the SPR standard provides the needed system and performance requirements
- (iii) That the FIT propose these changes to ISPACG for action.

Attachment: Oceanic SPR standard