



International Civil Aviation Organization

**The Sixteenth Meeting of the Regional Airspace Safety Monitoring
Advisory Group (RASMAG/16)**

Bangkok, Thailand, 20 – 24 February 2012

Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region

RCP AND RSP PLANNING AND IMPLEMENTATION

(Presented by the United States of America)

SUMMARY

This paper presents WP/5 from the recent Second Satellite Data Link Operational Continuity Meeting (SOCM/2). The SOCM/2 agreed that APANPIRG Sub-groups be invited to consider including in their work program and implementation initiatives to effectively implement a performance based framework for RCP and RSP in the Asia/Pacific Region. WP/5 proposed that APANPIRG begin the planning and implementation of a performance-based framework for communications and surveillance within the Asia-Pacific Regions.

This paper relates to –

Strategic Objectives:

A: *Safety – Enhance global civil aviation safety*

Global Plan Initiatives:

GPI-8 Collaborative airspace design and management

GPI-16 Decision support systems and alerting systems

GPI-22 Communication infrastructure

1. INTRODUCTION

1.1 In 2010, in accordance with ICAO Annex 6 and Doc 4444, the Global Operational Data-Link Document (GOLD) provides:

- a) Required Communication Performance (RCP) and Surveillance Performance (RSP) specifications
- b) Guidelines on prescribing specifications in airspace where reduced separations are predicated on certain communication, navigation and surveillance performance requirements
- c) Guidelines to States to aid in qualifying components of the operational system to the criteria prescribed by the performance specifications, including ANSP post-implementation monitoring

1.2 In September 2010, the APANPIRG formally adopted the GOLD. The GOLD now supersedes the FANS 1/A Operations Manual (FOM). The adoption of the GOLD requires that the APANPIRG and its Sub-Groups continue to manage the GOLD implementation concerning communications and surveillance performance.

1.3 The United States presented WP/5 to the SOCM/2 held in Bangkok, Thailand from 8-10 February 2012. This paper suggests that a regional – but globally compatible – plan is needed throughout the Asia-Pacific Region for the implementation of performance-based framework for communication and surveillance. This paper is contained within Attachment A.

2. DISCUSSION

2.1 The Asia Pacific Enroute Monitoring Agencies (EMAs) recognized by the RASMAG and APANPIRG conduct monitoring activities to ensure the continued safe-us of reduced separations that are predicated on certain communication, surveillance, and navigation requirements.

2.2 WP/5 from SOCM/2 suggest that with the increasing proliferation of different aircraft FANS 1/A systems, and given current ground system implementations, it is possible that aircraft separations may be misapplied because the qualification criteria for communication and surveillance are not formally applied within the Asia/Pacific Region.

2.3 The RASMAG, and the EMAs responsible for the associated monitoring activities of these reduced separation standards, should identify their role in the implementation of a performance-based framework for communication and surveillance.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) identify the role of RASMAG and the relevant EMAs in the implementation of a performance-based framework for communication and surveillance, and
- c) discuss any relevant matters as appropriate.

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SECOND SATELLITE DATA LINK OPERATIONAL CONTINUITY MEETING TO REVIEW THE PERFORMANCE AND PROVISION OF SATELLITE COMMUNICATIONS IN THE ASIA AND PACIFIC REGIONS

(Bangkok, Thailand, 8-10 February 2012)

- Agenda Item 3: Review Global Operational Data-Link Document (GOLD) and compliance
Planning and implementation of performance-based communications and surveillance framework

RCP AND RSP PLANNING AND IMPLEMENTATION

(Presented by the United States of America)

SUMMARY

This paper proposes that APANPIRG begin the planning and implementation of a performance-based framework for communications and surveillance within the Asia-Pacific Regions. The framework will complement the existing performance-based navigation framework. The performance-based communications and surveillance framework will initially apply performance specifications and monitoring per the Global Operational Data Link Document (GOLD) to FANS1/A controller-pilot data link communications (CPDLC) and automatic dependent surveillance contract (ADS-C).

1. INTRODUCTION

- 1.1. While the Asia/Pacific Region has an implementation plan for performance-based navigation no regional plan exists for the implementation of performance-based communication and surveillance.
- 1.2. A number of States in the Region states have reduced separations that are predicated on certain communication, surveillance, and navigation requirements. With an increasing proliferation of different aircraft FANS 1/A systems, and given current ground system implementations, it is possible that separations may be misapplied because the qualification criteria for communication and surveillance are not formally applied within the Asia/Pacific Region.

2. DISCUSSION

- 2.1. In 2008, SOCM/1 recognized the concept of performance-based framework for communications and surveillance, prescribing global performance specifications and ensuring compliance. The Global Operational Data Link Document (GOLD) provides guidance for its implementation.
- 2.2. The GOLD Ad-Hoc Working Group accomplished its initial task to produce the GOLD, 1st Edition, in June 2010, under the auspices of the North Atlantic Systems Planning Group (NAT SPG) and Asia-Pacific Air Navigation Planning and Implementation Regional Groups (APANPIRG). In that same month, the NAT SPG and APANPIRG officially adopted the GOLD, which now supersedes region-specific documents – Guidance Material for ATS Data

Attachment A

Link Services in North Atlantic Airspace and the FANS 1/A Operations Manual used throughout Asia-Pacific Regions, and parts of the South American and African Indian Ocean Regions.

- 2.3. The GOLD provides required communication performance (RCP) and surveillance performance specifications (RSP), and guidelines on prescribing specifications to apply to communications and surveillance capabilities in airspace where reduced separations are predicated on certain communication, navigation and surveillance performance requirements. The GOLD also provides guidelines to States to aid in qualifying components of the operational system to the criteria prescribed by the performance specifications, including ANSP post-implementation monitoring.
- 2.4. As implementation of reduced separations, in trail and climb/descent procedures, reroutes and other operational capabilities becomes more widespread, the regions of the world will need to continue to manage GOLD implementation and plan for and implement a global performance based framework for communications and surveillance. For example:
 - a) In June 2011, the North Atlantic Region System Planning Group endorsed its RCP and ADS-C Surveillance Performance Based Operations Implementation Plan, which is consistent with GOLD guidelines. The plan (See **Attachment A**) is being executed within the NAT Region with an effective implementation date of February 2015.
 - b) In March 2011, the ISPACG agreed to develop a performance-based framework for communications and surveillance within the South Pacific sub-region and encouraged all ISPACG ANSP members to implement system performance monitoring as outlined in the GOLD as an element of their respective SMS programs.
- 2.5. The performance-based framework is intended to fulfill a States obligation to ensure that the operational system meets requirements for intended uses. Furthermore, the framework will enable optimum use of technologies, such as Iridium and SwiftBroadband, and implementations, such as I4 Classic Aero and Iridium Next.
- 2.6. To implement a performance-based communications and surveillance framework, changes will be needed to:
 - a) Type design approval of aircraft, as necessary;
 - b) Master Minimum Equipment List (MMEL) policies;
 - c) Related operational authorizations;
 - d) Regional SUPPs (ICAO Doc 7030 Amendments) and AIPs (or equivalent);
 - e) Flight plan requirements; and
 - f) ATC automation to act appropriately based on communication and surveillance equipment and capability indicators provided in the flight plan.
- 2.7. It is expected that the performance-based framework would eventually apply to satellite communications (SATCOM) voice for air traffic control per the SATCOM Voice Guidance Material, currently under development by the Inter-Regional SATCOM Voice Task Force.
- 2.8. A regional – but globally compatible – plan is needed throughout the Asia-Pacific Regions for the implementation of performance-based framework for communication and surveillance.

3. ACTION BY THE MEETING

- 3.1. The Meeting is invited to:
 - a) Note the information provided in this paper;

- b) Cooperate with other regions and sub-regions within the Asia-Pacific Regions; and
- c) Recommend to APANPIRG to include in its work program a planning and implementation initiative to effectively implement a performance based-framework in the Asia-Pacific Regions.

**Attachment A. NAT RCP and ADS-C Surveillance Performance Based
Operations Implementation Plan**

Associated with the NAT data link services in support of RLongSM and RLatSM.¹

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
1	Prepare a draft <i>RCP and ADS-C Surveillance Performance-Based Operations Plan</i> outlining the way forward for consideration by the NAT IMG	NAT IMG/38 and NAT SPG/47	Approved by NAT SPG/47.	NAT CNSG	
2	Identify Key Target Dates on implementing RCP and ADS-C surveillance performance framework and prescribing specifications to support RLongSM, and RLatSM.	NAT IMG/38 and NAT SPG/47	Pending target dates for associated operations.	NAT IMG	NAT SPG Conclusion 44/11 targets 2015. Target dates for RCP/ADS-C performance specifications need to be in combination with the target dates for RLongSM and RLatSM operational implementation.
3	Confirm applicable performance specifications that will be used for operational implementation of data link services in support of RLatSM and RLongSM. Detail and validate CRM assumptions against actual performance measurements in accordance with GOLD.	NAT SPG/46 for RLatSM and RLongSM.	Approved by NAT SPG/47	NAT SARSIG	During trials of RLongSM and RLatSM, specifications are not prescribed, but will provide guidelines against which the actual performance is measured. RCP 240 and surveillance performance 180 are the candidate's specifications to be prescribed for RLatSM and RLongSM operations. Note: When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.

¹ Plans for prescribing RCP specifications associated with SATCOM voice will be addressed, as appropriate, pending completion of the SATCOM Voice Guidance Material by the Inter-Regional SATCOM Voice Task Force.

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
4	<p>Update operational concepts for implementation of RLatSM, RLongSM supported by associated RCP and surveillance performance specifications.</p> <p>Develop operational concept (of use), including procedures, for data link services using CPDLC and ADS-C to reduce the number and exposure of operational errors and pilot deviations, regardless of whether or not reduced ADS-C based separations are applied. For example, concept of use should detail conformance monitoring, intervention and route re-clearances.</p> <p>Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.</p>	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	NAT ATMG in coordination with CNSG	<p>ADS-C and CPDLC operational concepts are complete.</p> <p>Review and propose text to be candidate for GOLD amendment.</p>
DOCUMENTATION					
5	<p>Development of the GOLD material in support of reduced longitudinal:</p> <ul style="list-style-type: none"> -the provisions for data link service (AIC, guidance for AIPs, eligibility requirements etc) -performance specifications -initial qualifications for operations of operators, aircraft and ATC -post implementation monitoring 	NAT SPG/46	Complete	GOLD ad-hoc group	Amendments to GOLD are in work for tasks 3, 5, 6 and 7. Adoption planned at NAT SPG/49.
6	<p>Develop flight crew and controller contingency procedures in the event of service outage, malfunction or failure that would cause performance to degrade below that required by specifications.</p> <p>Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.</p>	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	NAT ATMG/ CNSG	Included in NAT Doc 006. Amendments needed to ensure that long duration outages/degradations are also considered. Similar provisions should be included in the GOLD and in NAT Doc 007.
7	<p>Develop the criteria for resuming data link service, RLatSM, or RLongSM operations after service communication and/or surveillance capabilities are restored to acceptable level of performance.</p> <p>Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.</p>	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	NAT ATMG/ CNSG	Included in NAT Doc 006. Amendments needed to ensure that long duration outages/degradations are also considered. Similar provisions should be included in the GOLD and NAT Doc 007.

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
8	Draft guidance material for the flight plan to define the descriptors for performance specifications, as appropriate, using the new format planned for 2012 implementation. Review and comment on material for incorporation in GOLD.	a) NAT IMG/40 and NAT SPG/48 (as part of the NAT SUPPs PfA) and GOLD b) 12 th Air Navigation Conference – amend Doc 4444	Work needs to be confirmed and assigned. Draft and review through end 2012.	NAT CNSG ICAO (Global)	Definition of P descriptors in Item 10a and expansion or redefinition of descriptors for ADS-C.
9	Draft or update PfA (or revise existing drafts) to the NAT Regional Supplementary Procedures (SUPPs) (Doc 7030) to prescribe the performance specifications for communication and surveillance to support RLatSM and RLongSM. PfA should include criteria for operator eligibility, aircraft equipage, requirements for flight planning, monitoring, alerting and reporting.	NAT IMG/42 and NAT SPG/49	Draft and review through end 2012.	NAT CNSG NAT ATMG	Dependent on timeline for RLatSM and RLongSM. PfA should be part of PfA for each operational improvement.
10	Amend AIPs and other State documents to support SUPPs amendment.	Consistent with Task 8	Consistent with Task 8	States	Consistent with Task 8
11	Implement operational communications performance monitoring capability in ATC automation.	Before the start of operational trials of RLongSM or RLatSM.	Gander – completed Shanwick – completed Reykjavik – 4Q/2011 Santa Maria – 2Q/2011 New York – Completed Bodo – TBD Shannon – 1Q/2013	NAT ANSPs	Should be in place prior to effective date of data link mandate and start of RLatSM or RLongSM trials.
12	Measure actual performance against specifications for feasibility, i.e., ACP, ACTP, PORT, ADS-C latency for operators and aircraft types	Prior to operational implementation	Ongoing	ANSPs/ DLMA/ CNSG/ SARSIG	Collect and analyze data in accordance with GOLD, Apx D.

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	AIRWORTHINESS AND OPERATIONAL ELIGIBILITY				
13	Provide guidance to State regulators related to aircraft equipage and operator eligibility requirements taking into account the GOLD and appropriate RCP and surveillance performance specifications. Review and amend GOLD, if required.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	OPSAIR SG	Refer to FAA AC 20-140A and AC 120-70B. Other State material may apply.
14	Develop or revise State guidance and/or regulations, as necessary. Establish State airworthiness requirements. Establish operational policy/procedures requirements for operational approval. Prepare State inspectors to perform tasks for operational approval. Develop plan to issue operational approval to national operators by [date], to extent possible. Train pilots and, if applicable, dispatchers on RCP and surveillance performance aspects of reduced separation. Develop and distribute operations manuals, pilot bulletins or other appropriate docs containing RCP and communication surveillance performance policy/procedures.	End of 2014 Prior to operational implementation of RLatSM or RLongSM	On-going Need status reports from States	SOG/ States/ ANSPs/ Users	Implementation tasks in this plan need to be completed by NAT SPG/49 (June 2013) to allow time for operational readiness to implement RCP/surveillance performance by 2015.
	POST IMPLEMENTATION TASKS				
15	Post-implementation monitoring, analysis and corrective action per GOLD, Apx D and any other necessary monitoring tasks.		On-going See related Task 11.	ANSP/ DLMA/ CNSG	When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.
16	Develop a guidance material to clarify the interpretation of RCP and surveillance specification in terms of compliance/non-compliance.	NAT IMG/41 NAT SPG/49	In progress	CNSG	
17	Conduct workshops to raise awareness on RCP and surveillance performance.	NAT SPG/49		ICAO/ States	

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