



International Civil Aviation Organization

**Future Air Navigation Systems Interoperability Team-Asia (FIT-ASIA)**

Bangkok, Thailand, 28 – 29 March 2013

## Agenda Item 2: Central Reporting Agency Report

### REVIEW OF SEASMA FANS 1/A SYSTEM PERFORMANCE DATA RECEIVED BY THE CENTRAL REPORTING AGENCY

(Presented by SEASMA)

#### SUMMARY

This paper reviews FANS 1/A system performance data in the Singapore and Ho Chi Minh oceanic FIRs, and requests participation by FIT Asia stakeholders in the continuous improvement of FANS1/A operations in the FIT Asia region. .

This paper relates to –

#### Strategic Objectives:

- A: *Safety – Enhance global civil aviation safety*
- C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

#### Global Plan Initiatives:

- GPI-2 Reduced vertical separation minima
- GPI-8 Collaborative airspace design and management
- GPI-9 Situational awareness
- GPI-16 Decision support systems and alerting systems
- GPI-17 Data link applications
- GPI-21 Navigation systems
- GPI-22 Communication infrastructure

## 1. INTRODUCTION

1.1 Data obtained from post implementation monitoring is used to measure FANS1/A system performance against Required Communications Performance (RCP) and Required Surveillance Performance (RSP) in support of ICAO Annex 11 post implementation monitoring requirements. Data in this paper is presented using performance monitoring guidance from the FANS Operations Manual (FOM) which has been superseded by RCP and RSP system performance criteria documented in the Global Operational Data Link Document (GOLD).

1.2 Overall performance is steady and shows similar performance observed in the previous year. It is anticipated that performance reporting will transition to the RCP, RSP format defined in GOLD Appendix D midterm in 2013 as the transition to new ground automation is completed. System availability measurement is based on reported outages by the CSP and outages observed by the Air

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Navigation Service Provider.

1.3 Examples of detailed performance analysis in the GOLD Appendix D format are available on the CRA website at <http://www.ispacg-cra.com/>.

1.4 Performance data observed from Controller Pilot Data Link Communication (CPDLC) and Automatic Dependent Surveillance - Contract (ADS-C) systems are measured against the appropriate RCP and RSP specifications to demonstrate that safety objectives which rely on the communications infrastructure can be met by the aircraft and ground systems in the respective airspace.

## 2. DISCUSSION

2.1 ADS-C Performance. The RSP180 requirement is 99.9% of downlinks to be received within 180 seconds, and 95% of downlinks to be received within 90 seconds. Data shown in **Attachment 1** are measured against FOM uplink and downlink performance requirements. It is anticipated that future reports will provide RSP180 performance data.

2.2 CPDLC Performance (RCP). The RCP240 requirement is 99.9% of transactions to be completed within 210 seconds and 95% to be completed within 180 seconds. RCP combines the Technical system performance (RCTP) requirements with an allocation for pilot response time. It should be noted that RCTP and RCP performance data should be measured against intervention messages (i.e. climb, descend, speed, offset). Route clearance messages and communications transfer messages should not be included. Data shown in **Attachment 1** are measured against FOM uplink and downlink performance requirements. It is anticipated that future reports will provide RCP240 performance data.

2.3 Performance summary. Although not yet in the GOLD format for RCP and RSP the data available shows stable performance meeting requirements outlined in the FOM for both uplink and downlink messages. From the data provided it is anticipated that RSP180 and RCP240 performance can be achieved.

2.4 Post Implementation Monitoring. ICAO requires post implementation monitoring to ensure that the required communications and surveillance performance is met for the separation standards being applied. In addition post implementation monitoring will drive further performance improvements in the region. A mature problem reporting system, and the investigation and resolution of identified issues is essential in today's data-link environment.

2.5 Availability. System availability requirements are defined in the GOLD. Network outages greater than 10 minutes are counted against annual availability requirements. An upgrade of the I3 satellite Ground Earth Station (GES) for the Indian Ocean Region (IOR) took place on March 19<sup>th</sup> at 12:00 UTC. The upgrade to new I4 GES hardware is expected to improve GES availability within the region due to improved redundancy monitoring capability.

2.6 Data Sharing. Annex 11 requires that agreements shall be put in place to share information from monitoring programs between regions. The implication is that ATSPs within a region will aggregate their data to enable this requirement. If we are to progress this it will require FIT Asia ATSPs to agree to both data gathering and aggregation and the meeting may like to consider how this may be progressed at an ICAO regional level.

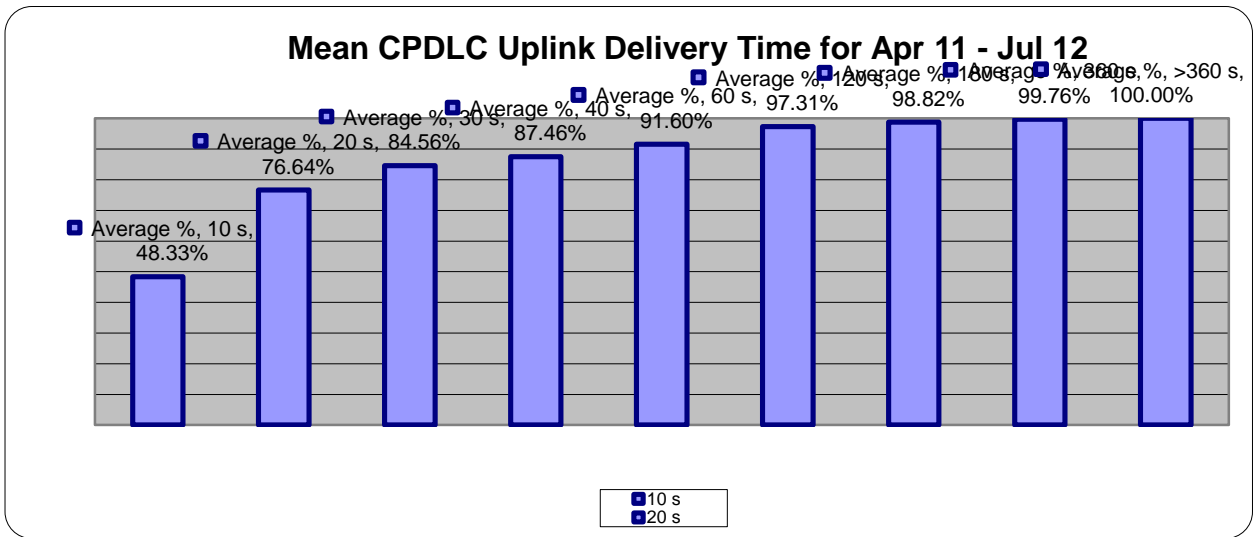
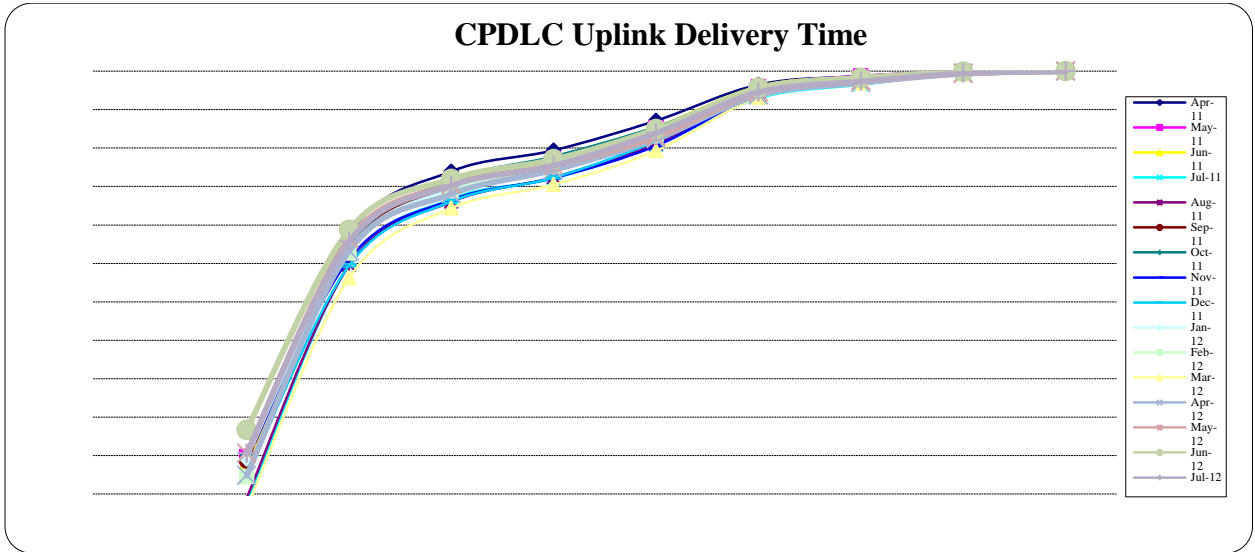
2.7 Observed performance data is appended in **Attachment 1**.

**3. ACTION BY THE MEETING**

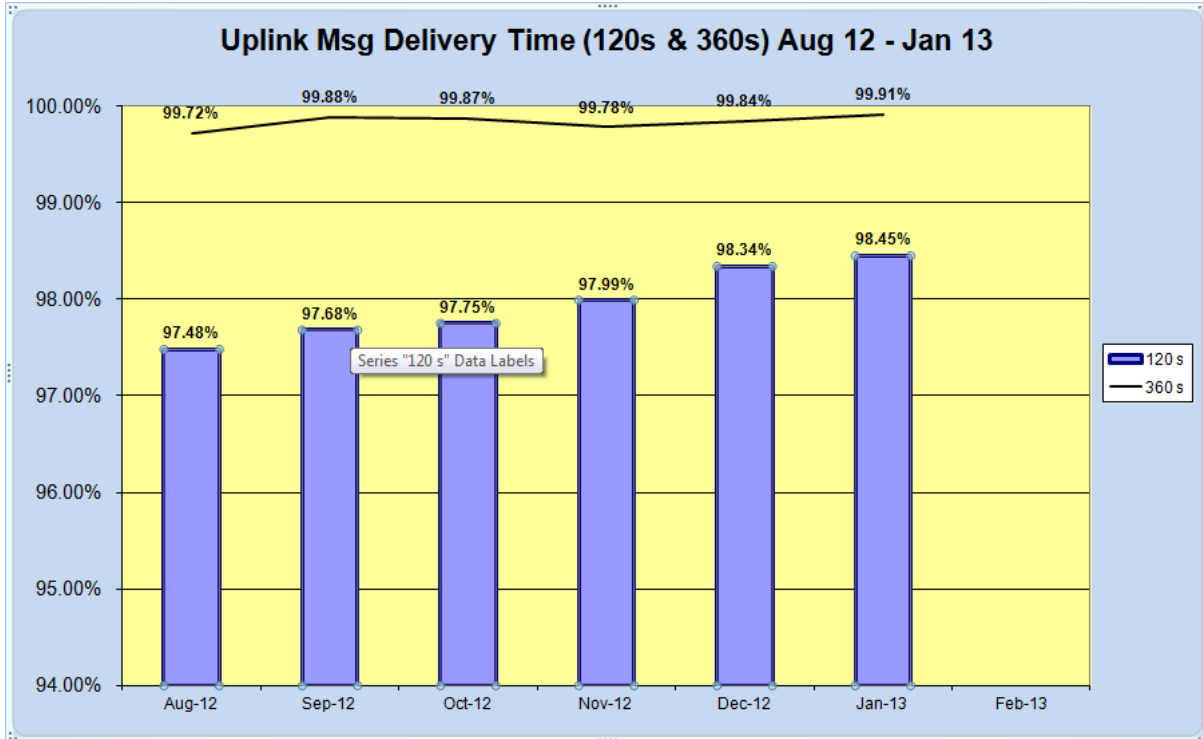
3.1 The meeting is invited to:

- a) Note the observed performance of FANS1/A data-link in Singapore oceanic FIR.
- b) Review stakeholder support for the FANS1/A continuous improvement process in the region and investigate ways to improve participation in problem reporting and performance data monitoring.
- c) Discuss ways that the Annex 11 requirement for the sharing of information from monitoring programs can be progressed.

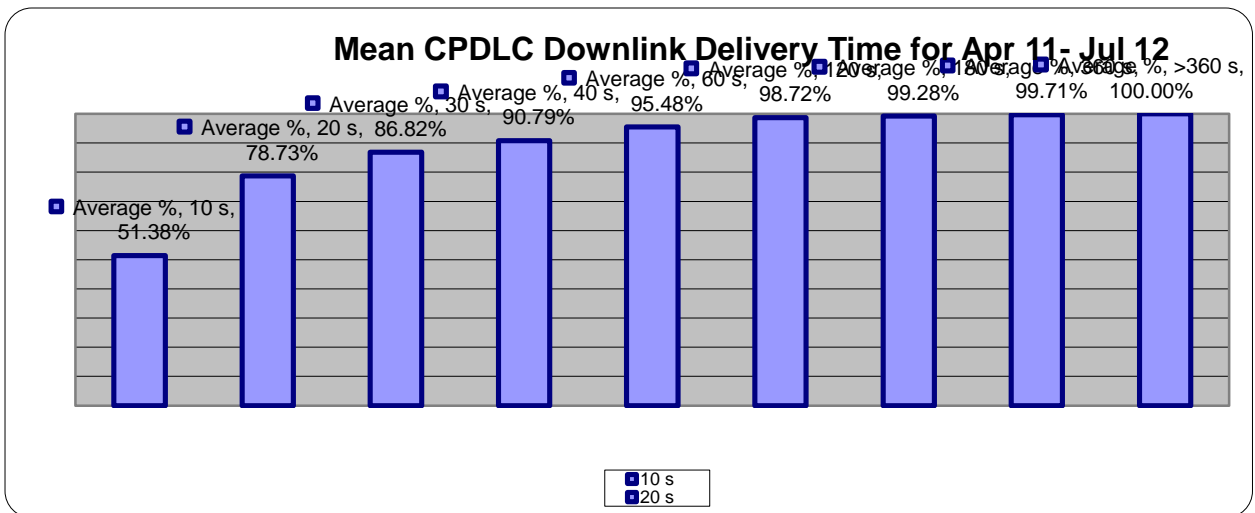
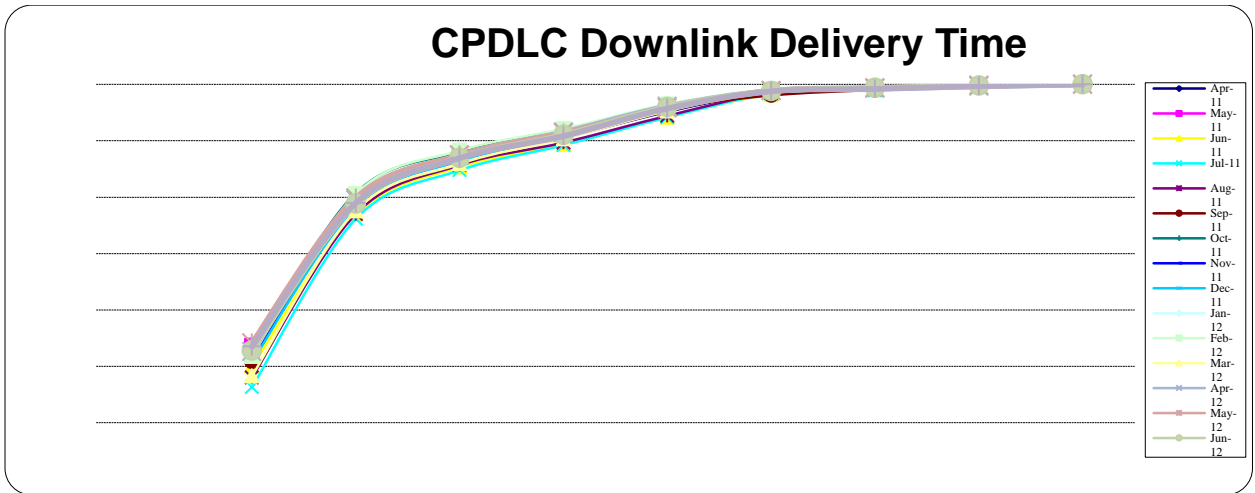
Singapore FIR CPDLC Uplink Performance



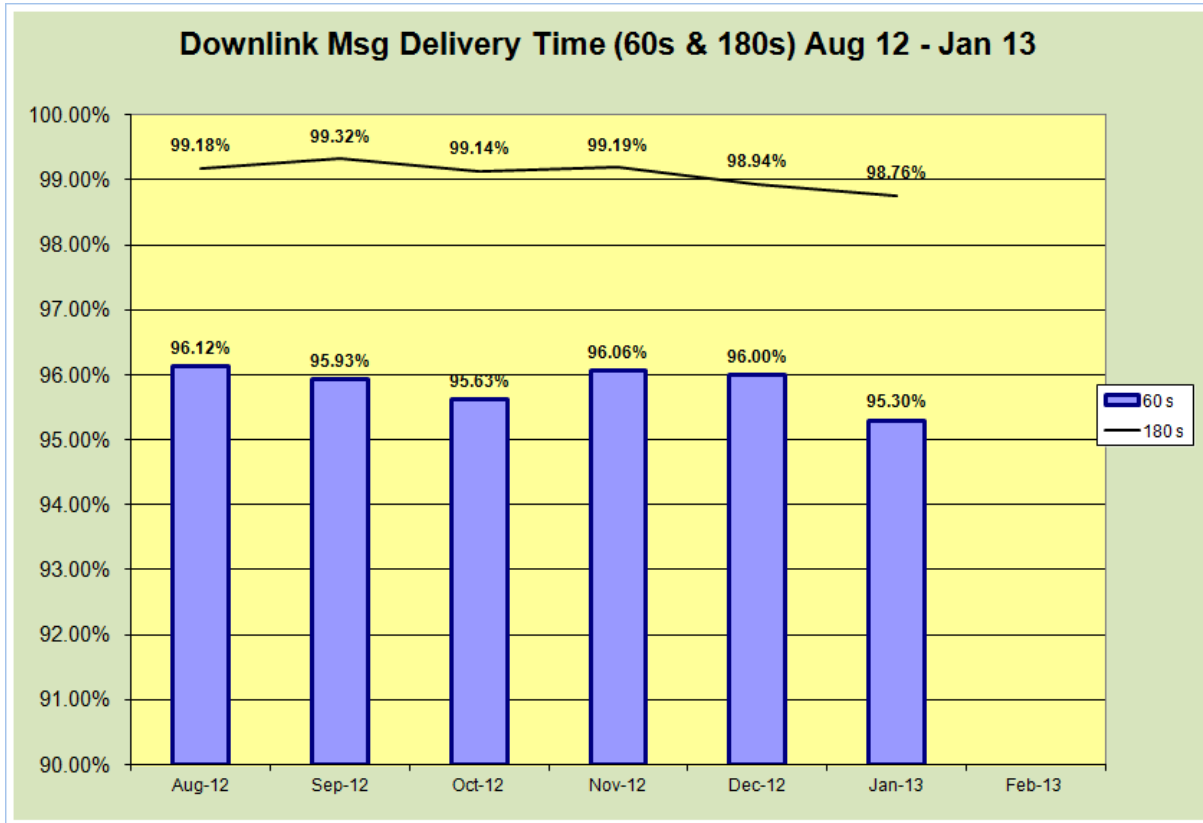
**Singapore FIR CPDLC Uplink Performance**



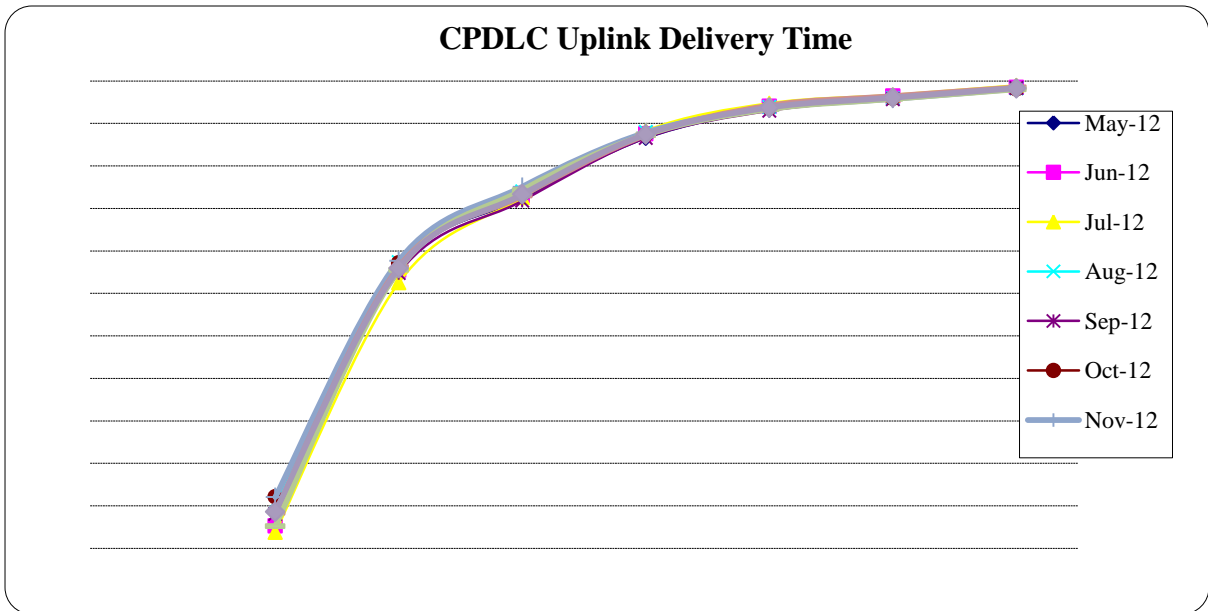
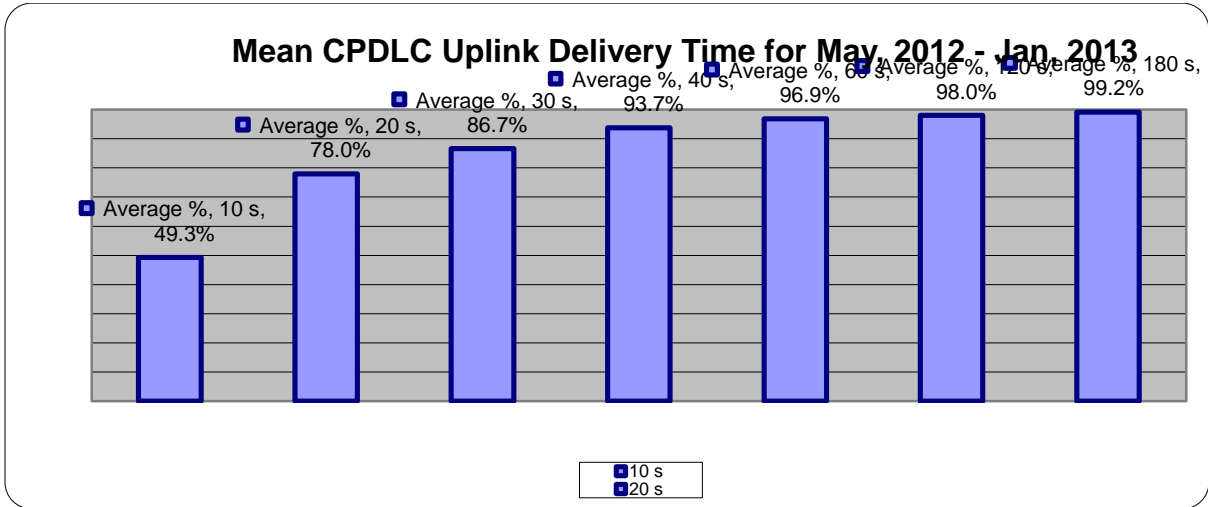
**Singapore FIR CPDLC Downlink Performance**



**Singapore FIR CPDLC Downlink Performance**

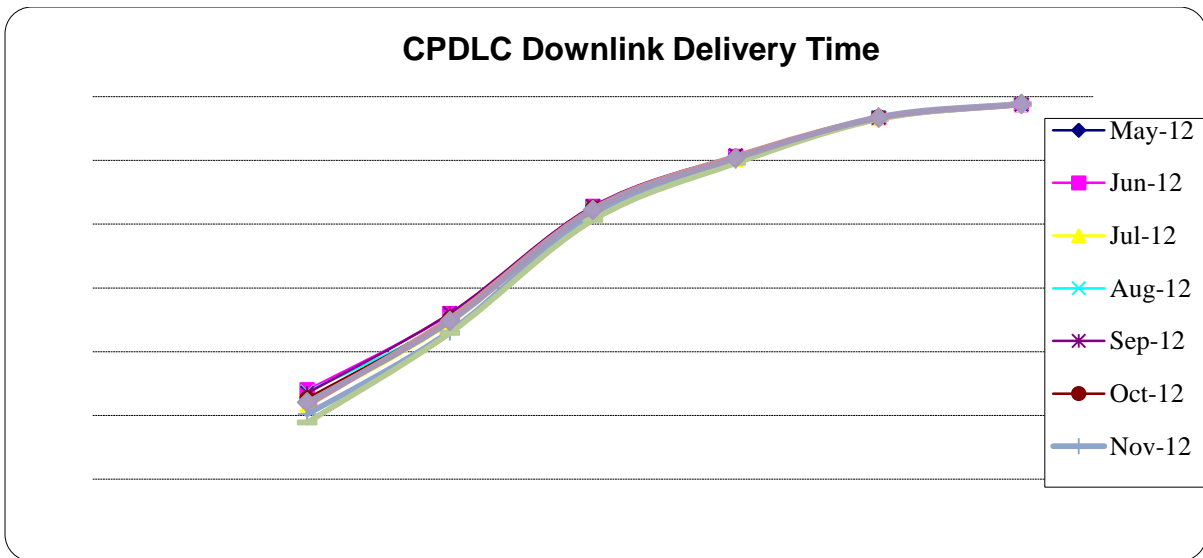
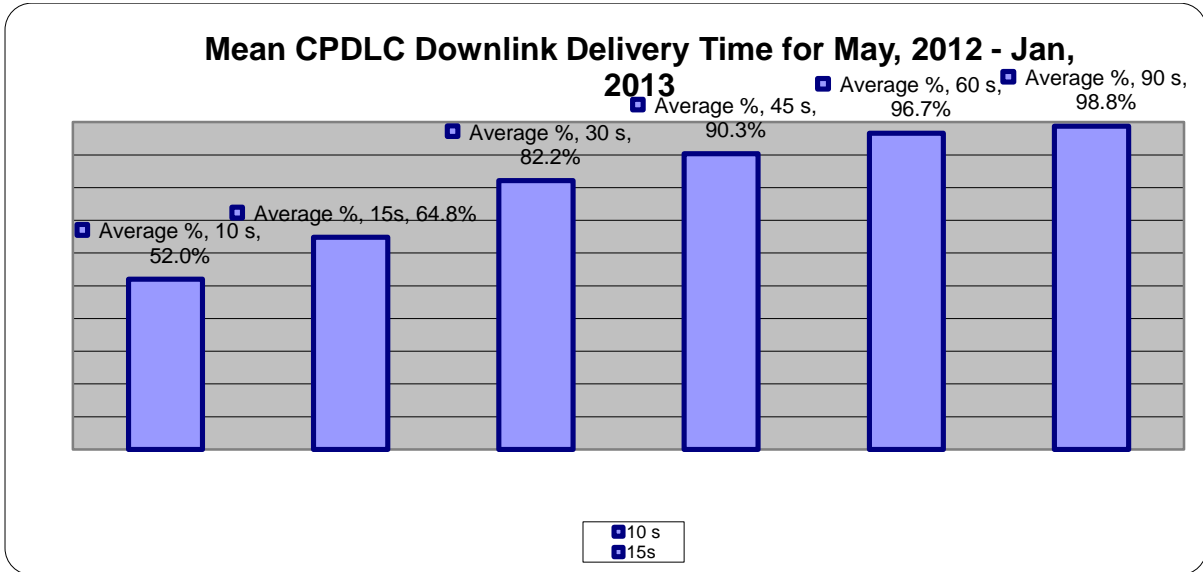


**Ho Chi Minh FIR CPDLC Uplink Performance**

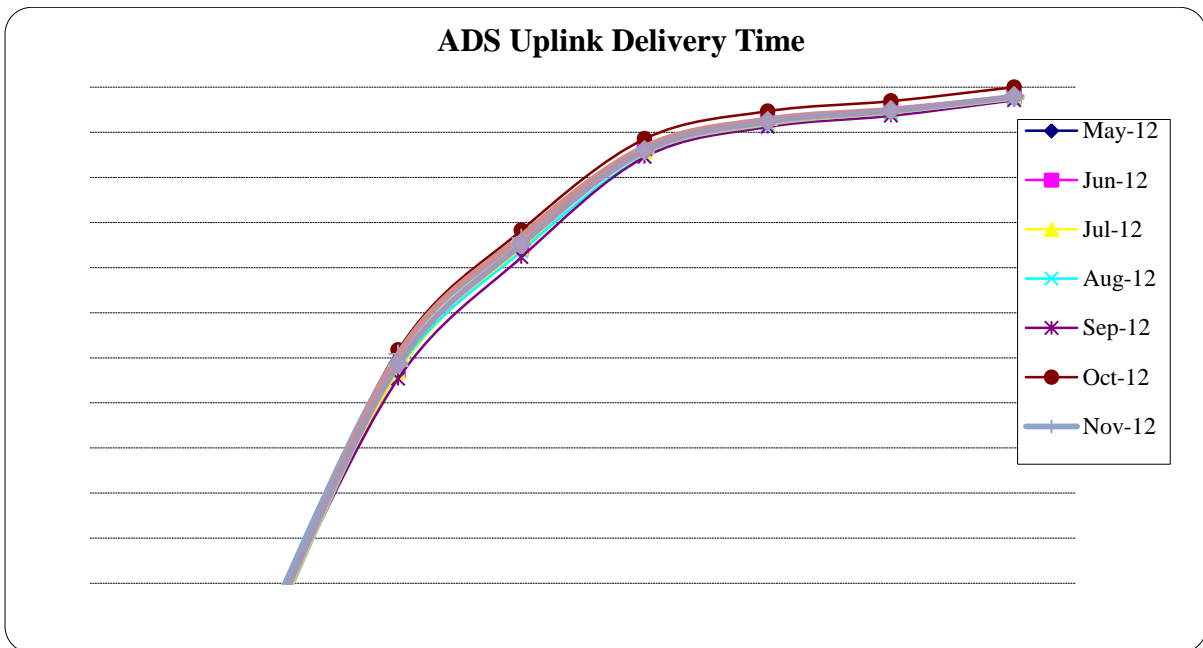
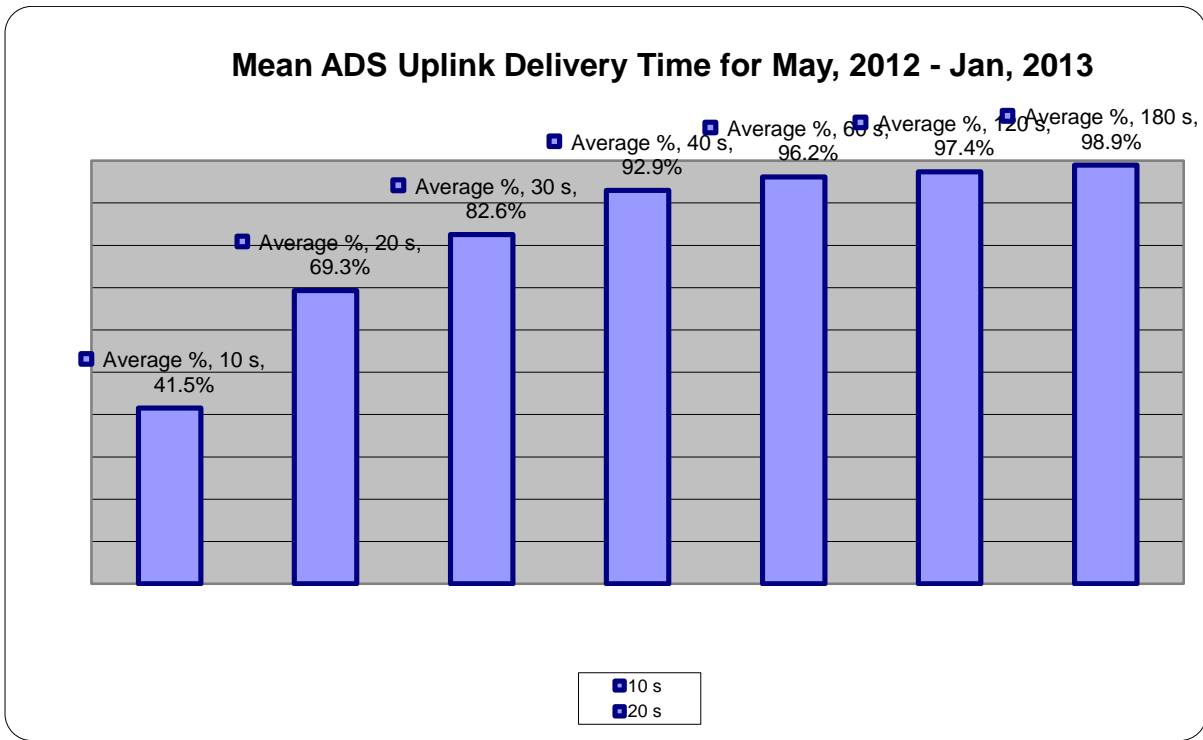




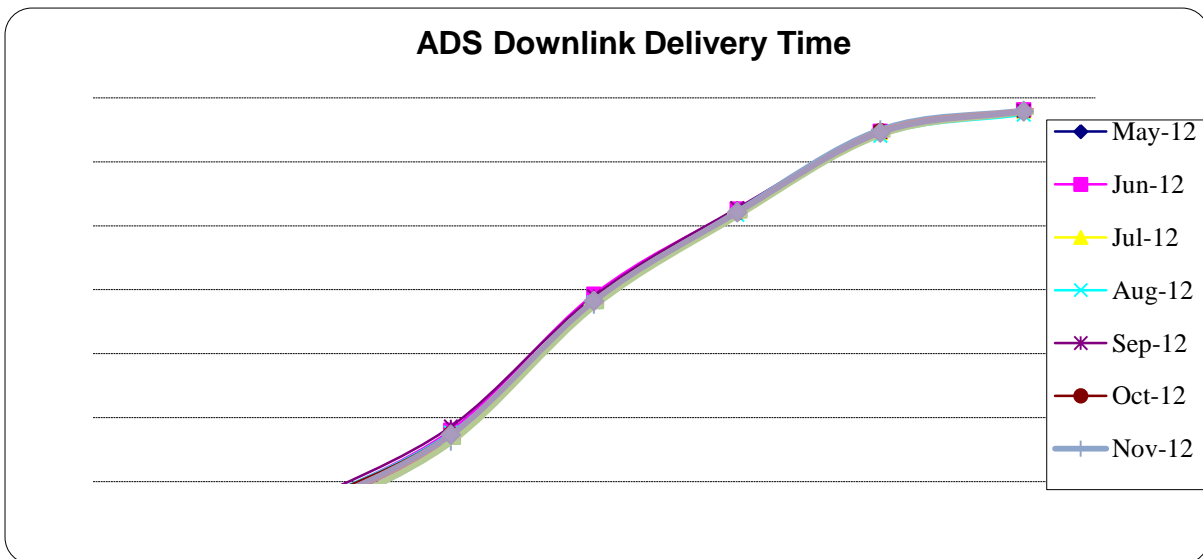
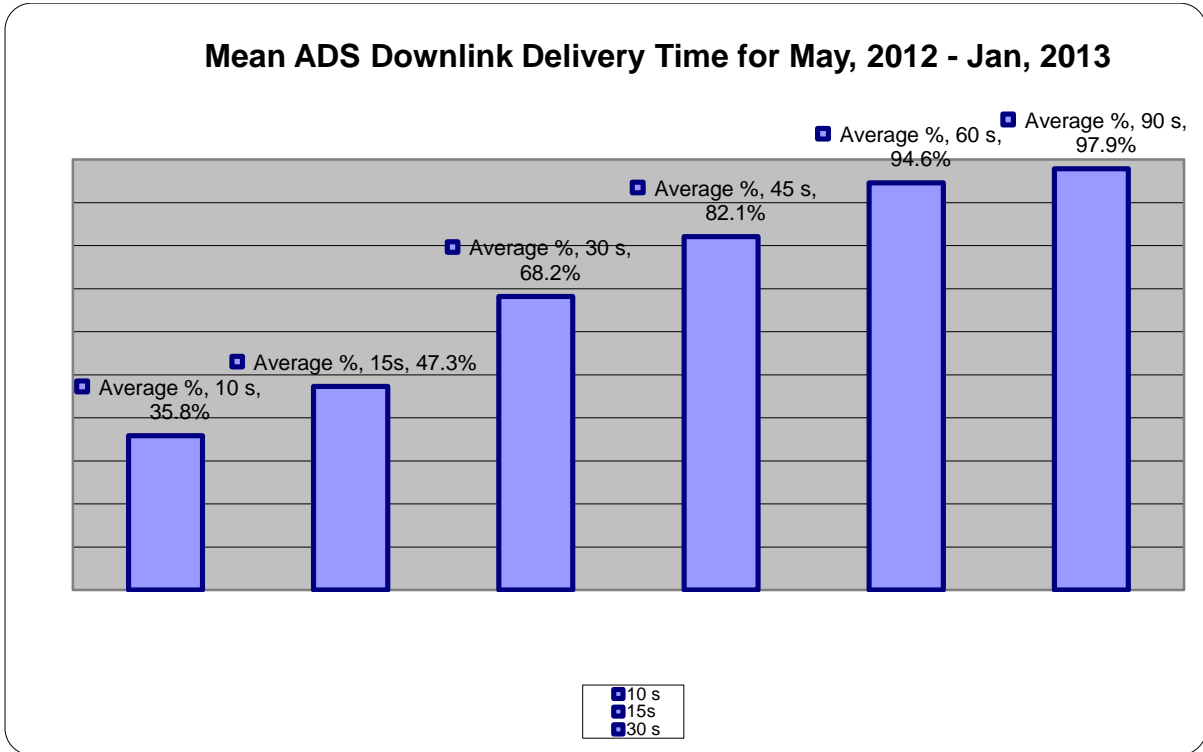
**Ho Chi Minh FIR CPDLC Downlink Performance**



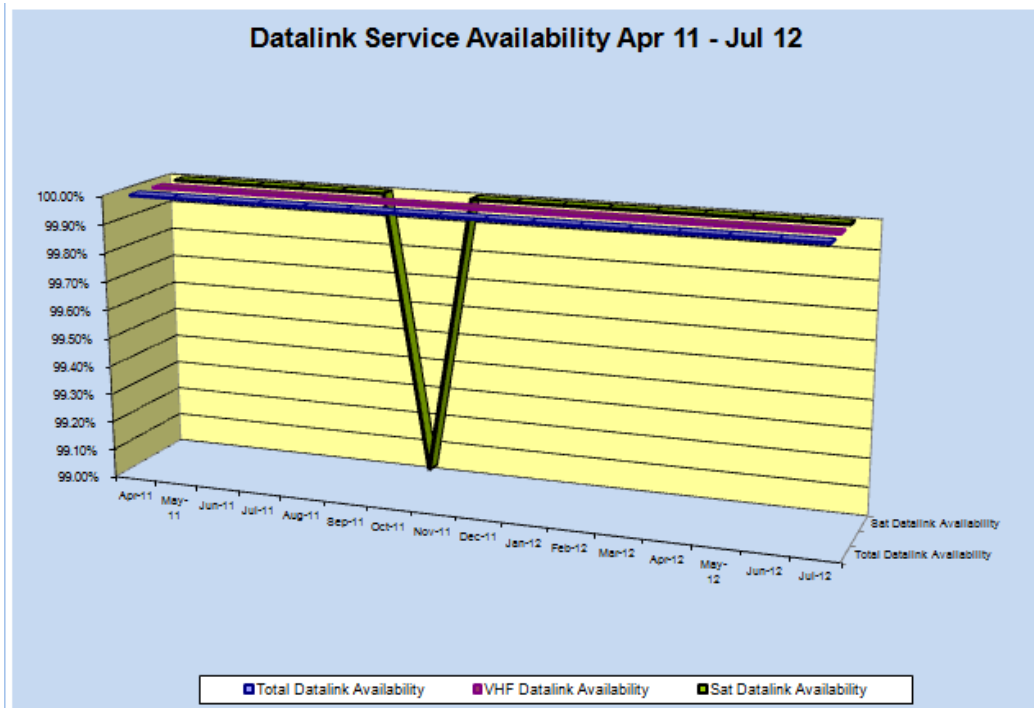
**Ho Chi Minh FIR ADS Uplink Performance**



**Ho Chi Minh FIR ADS Downlink Performance**



**Singapore FIR Network Availability**



### Datalink Service Availability Aug 12 - Jan 13

