



International Civil Aviation Organization

ICAO

**Sixteenth Meeting of the FANS Interoperability Team – Asia
(FIT-Asia/16)**

Bangkok, Thailand, 9 – 11 June 2026

Agenda Item 4: Review of ADS-C/CPDLC Operations and Performance

TO ANALYSE AND IMPROVE DATALINK PERFORMANCE IN INDIAN FIRs

(Presented by India)

SUMMARY

This paper presents the abnormal delayed messages in the Transit Time of ADS-C data link Performance in Indian FIR and the Investigation by Airports Authority of India and by Communication Service Provider SITA.

1. INTRODUCTION

1.1 The regional Performance Based Communications and Surveillance (PBCS) monitoring program requires continuous performance monitoring of data link operations utilizing separation standards where Required Communications Performance (RCP) or Required Surveillance Performance (RSP) specifications are required under the provisions of ICAO Annex 11 Air Traffic Services and Doc 4444 Procedures for Air Navigation Services – Air Traffic Management (PANS ATM). In accordance with the supporting guidance provided in ICAO Doc 9869 PBCS Manual, the Air Navigation Service Provider (ANSP) should perform an analysis of actual communication performance (ACP) and actual surveillance performance (ASP) at an interval suitable to verify system performance, and to enable continuous performance improvement. The established lines of communication between airspace safety monitoring organizations and their respective States are the most effective and efficient means for transmission of problem or non-compliance reports between the ANSP detecting/reporting the problem or non-compliance and the State of Operator/Registry of the aircraft concerned.

1.2 The requirement for on-going monitoring after implementation of a data link system is based on several factors, including:

- a) degradation of performance with time,
- b) increasing traffic levels, and
- c) changes to equipment and/or procedures which may occur from time to time.

1.3 On-going monitoring also permits the detection of errors that may have been introduced by a third party (e.g. a communications service provider). For India, SITA is CSP (Communication Service Provider).

1.4 BOBASMA (Bay of Bengal Arabian Sea Indian Ocean Airspace) is an EMA (Enroute Monitoring Agency) established by Airports Authority of India and endorsed by ICAO. EMA-BOBASMA is responsible for submitting Datalink Performance Report FIT-ASIA in ICAO meeting.

1.5 Application of the reduced lateral and longitudinal separation minima in the Indian FIRs (Chennai, Mumbai, Kolkata and Delhi) is dependent on a smooth functioning FANS 1/A data link system.

2. DISCUSSION

2.1 India has extracted data points from Automation system for India FIRs viz. Chennai, Mumbai and Kolkata as per PBCS manual 9869 with Transit Time more than 90 seconds (sometimes abnormal delay more than 3000 seconds) from December 2025 to March 2026. This delayed Transit Time is the main reason for the non-compliance of airframe and degrade the datalink performance in the specific FIR which will affect implementation of reduced separation minima in the specific FIR.

2.2 The following table reflects the total number of messages, the number of messages with Transit Time more than 90 seconds and the percentage of messages with Transit Time more than 90 seconds. This table reflects that nearly 3% of messages are having Transit Time more than 90 seconds. Most of the delays are due to Transition between media or intermixing of ARINC and SITA network.

FIR NAME	TOTAL MESSAGE RECORDED IN AUTOMATION SYSTEM	NUMBER OF MESSAGES WITH TRANSIT TIME MORE THAN 90 SECONDS	PERCENTAGE OF MESSAGES WITH TRANSIT TIME MORE THAN 90 SECONDS
CHENNAI	201857	6447	3.19
MUMBAI	539160	16036	2.97
KOLKATA	512473	15049	2.94

2.3 SITA being the Communication Service Provider for Indian FIRs, the ADS-C Data log for the period of December 2025 to March 2026 extracted from Automation system with Transit Time more than 90 seconds were sent to SITA for investigation to find the role of CSP in the delayed messages.

2.4 SITA reported the following points,

- a) SITA's support obligation is limited to investigating specific, documented technical faults on the network.
- b) SITA is not resourced/contractually mandated to perform comprehensive network studies/mass data processing of tons of thousands of records.
- c) Providing the summary table of thousands of delayed messages does not constitute a "technical fault report" that SITA's engineering team can action.
- d) SITA agreed that RCP 240 compliance is critical for safety, and the responsibility for identifying the source of the delay whether it be the aircraft avionics, their media provider (VHF/SATCOM), or the Automation system lies initially with ANSP's monitoring program.
- e) SITA agreed that a targeted sample of not more than 20-30 records representing the most significant delays to allow them to conduct a forensic trace of the packets.
- f) SITA suggest Airports Authority of India (AAI) leverage its internal monitoring capabilities to narrow the scope of this request.
- g) AAI then sent 25 records with abnormal delays for SITA to investigate.
- h) The reply received from SITA has been attached as Appendix B (Appendix A contains the ADS-C data collection points and column descriptions). As per SITA, most of the

delay is due to ARINC network or transition of one media to other media and multiple media advisories.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper.

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APPENDIX A

ADS-C DATA COLLECTION POINTS

REF	LABEL	DESCRIPTION
1	ANSP	Four letter ICAO designator for the facility
2	Aircraft Registration	Aircraft Registration in Doc 4444 format
3	Aircraft Type Designator	ICAO Aircraft Type Designator
4	Operator Designator	ICAO designator for the Aircraft operating agency
5	Date	in YYYYMMDD Format
6	RGS	RGS designator from which the ads-c downlink was received.
7	Report Type	the type of ads-c report extracted from the ads-c basic group report tag where tag value 7=PER, 9=EMG, 10=LDE, 18=VRE, 19=LRDE, 20=WCE. as some aircraft concatenate more than one report in the same downlink extract, the ads-c report tag from each ads-c basic group and identify them in the rep_type column by using the first letter of the report type as an identifier (e.g. for a concatenated report containing two ads-c basic groups for a periodic report and a waypoint event report the field will contain pw). where a downlink does not contain an ads-c basic group, the rep_type field will be left blank.
8	Latitude	the current latitude decoded from the ads-c basic group. the format is “+” for north and “-” for south followed by a decimal number of degrees (e.g. -33.456732).
9	Longitude	the current longitude decoded from the ads-c basic group. the format is “+” for east and “-” for west followed by a decimal number of degrees (e.g. +173.276554).
10	Aircraft Time	the time the aircraft was at the position (latitude and longitude) in the ads-c report to within the accuracy specified by the RSP specification in HH:MM:SS format
11	Received Time	The ANSP timestamp on the receipt of the ADS-C message in HH:MM:SS format
12	Transit Time	the transit time of the ads-c downlink in seconds calculated as the difference between #10 aircraft time and #11 received time

APPENDIX B

EVALUATION BY COMMUNICATION SERVICE PROVIDER (SITA)
 (Columns and Descriptions added below the table)

1	2	3	4	5	6	7	8	9	10	11	12	EVALUATION BY SITA
VOMF	ETAUQ	B789	ETH	20260511	MAA	PER	12.801389	82.142778	01:10:53	02:10:50	3597	The aircraft was seen to be on ARINC network. At the SITA network processor, the messages are seen to be in time. Hence this could be a delay issue on the ARINC network.
VOMF	GXATW	A21N	AWC	20260511	IG1	PER	11.780556	95.534167	12:58:38	13:19:47	1269	Aircraft was on ARINC network. No messages seen between 12:58 GMT to 13:19 GMT. Observed media advisory at 13:19 GMT establishing satcom. Hence this could be a delay issue on the ARINC network.
VOMF	BLAR	A333	CPA	20260511	IG1	PER	12.417778	94.872778	15:53:32	16:14:04	1232	The aircraft was seen to be on ARINC network with frequent media advisories at 15:53 GMT, 15:57 GMT, 15:58 GMT. Between 16:02 GMT to 16:05 GMT the aircraft failed to connect over the network.
VOMF	9MXBE	A333	XAX	20260511	IXZ1	PER	11.889444	88.893889	18:16:18	18:33:14	1016	No messages seen between 17:41 GMT to 18:17 GMT. Later since 18:17 GMT there were multiple uplink failed attempts due to error 234 which means the aircraft was unable to communicate over the network. Multiple media advisories seen and the aircraft established VHF connection at 18:33 GMT after which the messages were delivered normally.

1	2	3	4	5	6	7	8	9	10	11	12	EVALUATION BY SITA
VOMF	ETAPY	B77W	ETH	20260511	MAA	PW	13.321667	83.836944	20:56:40	21:13:26	1006	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations. Supporting we could see multiple media advisories and MAS failures from ARINC side.
VOMF	BLAR	A333	CPA	20260511	IG1	PER	12.023333	94.289167	15:58:47	16:15:27	1000	The aircraft was seen to be on ARINC network and also the aircraft was seen unable to logon to the network. To check with ARINC.
VOMF	BLAR	A333	CPA	20260511	IG1	PER	12.0475	94.319167	15:58:30	16:15:09	999	The aircraft was seen to be on ARINC network and also the aircraft was seen unable to logon to the network. To check with ARINC.
VOMF	A6LRE	A21N	ETD	20260511	IOR7	PER	14.882778	83.814722	09:14:07	09:30:07	960	From 19:15 to 19:20 GMT the aircraft was unable to communicate or connect over the SITA network. We could see the error 311 NO ACK. At 19:29 GMT it went under link test and got connected over VDL.
VOMF	ETAPY	B77W	ETH	20260511	XXI	PW	13.321667	83.836944	20:56:40	21:10:44	844	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations. Supporting we could see multiple media advisories and MAS failures from ARINC side.
VOMF	ETAPY	B77W	ETH	20260511	MAA	PER	13.334444	83.992778	20:55:35	21:06:11	636	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations. Supporting we could see multiple media

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												advisories and MAS failures from ARINC side.
VOMF	BLAR	A333	CPA	20260511	IG1	PER	11.570556	93.392222	16:06:18	16:15:53	575	The aircraft was seen to be on ARINC network and also the aircraft was seen unable to logon to the network. To check with ARINC.
VOMF	ETAPY	B77W	ETH	20260511	XXI	WCE	13.114167	88.686944	20:22:00	20:30:21	501	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations.
VOMF	A7BAI	B77W	QTR	20260511	IOR5	PER	12.621389	83.635833	21:21:00	21:29:14	494	We do not see any messages between 21:17 GMT to 21:23 GMT. The aircraft went under link test at 21:23 GMT and 21:27 GMT and at 21:28 GMT it was on NO COMMS as we could see the error 311. At 21:30 GMT the aircraft went under link test and there was a media change over to another satellite.
VOMF	9MMVK	B38M	MAS	20260511	IGW1	PER	11.069722	94.783889	22:04:40	22:12:25	465	We don't see any message between 22:03 GMT to 22:06 GMT. The aircraft went under link test at 22:09 GMT and media advisory seen at 22:10 GMT where the aircraft shifted from satcom to VHF. Later that messages were seen flowing normal.
VOMF	ETAPY	B77W	ETH	20260511	XXI	PW	12.582778	71.996111	22:20:03	22:27:31	448	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations.

VOMF	GXATW	A21N	AWC	20260511	IG1	PER	10.587222	91.543889	13:29:22	13:36:37	435	The aircraft was logged on to ARINC network. We could see there was error 311 NO ACK means the aircraft was unable to communicate or connect to the network. Could have been an issue on the ARINC network as well.
VOMF	HZAK32	B77W	SVA	20260511	APK1	PER	10.771111	71.181944	03:01:09	03:07:12	363	The aircraft was in No Comms state from 13:01 GMT to 13:05 GMT. Even it was lost from the tracking table at 13:05 GMT.
VOMF	HZAK32	B77W	SVA	20260511	APK1	PER	10.771111	71.181944	03:01:09	03:06:54	345	The aircraft was in No Comms state from 13:01 GMT to 13:05 GMT. Even it was lost from the tracking table at 13:05 GMT.
VOMF	BLAL	A333	CPA	20260511	IG1	PER	12.495278	94.866111	17:01:03	17:06:07	304	The Aircraft was on ARINC network and at 17:02 GMT we see media advisory where it lost VHF and switched to satcom. At 17:05 it showed error 212 Unknown Aircraft.
VOMF	ETAPY	B77W	ETH	20260511	XXI	PER	13.334444	83.992778	20:55:35	20:59:35	240	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations.
VOMF	T7JIM	GL7T	XAA	20260511	IG1	PER	8.208056	92.841667	20:38:02	20:41:43	221	No logs found on SITA system for the mentioned date.
VOMF	ETAPY	B77W	ETH	20260511	XXI	WCE	12.758333	73.451389	22:09:45	22:13:11	206	As per the timestamps in our system, the message was processed at the same time when it was received. Hence no problem observed at SITA end. Since the aircraft was on ARINC network, we would request you to please check with ARINC.

VOMF	ETAPY	B77W	ETH	20260511	XXI	PER	13.326944	87.740556	20:28:55	20:32:18	203	Aircraft was on ARINC network. We could see error 311 stating the aircraft was unable to communicate with the ground stations.
VOMF	9VMBF	B38M	SIA	20260511	IGW1	PER	9.278056	90.590556	02:01:54	02:05:10	196	At 02:00 GMT we see media advisory where in the aircraft lost VHF and switched to satcom, but there were no message transactions seen. At 02:04 GMT it went under link test and switched back to VHF.
VOMF	9MMVN	B38M	MAS	20260511	IGW1	PER	9.150833	90.401667	07:55:09	07:58:20	191	We don't see any issue in the Datalink. All message transaction seems to be normal at the time mentioned.

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