International Civil Aviation Organization

Twenty Eighth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/28) of APANPIRG

Bangkok, Thailand, 01-05 July 2024

Agenda Item 5: Aeronautical Mobile Communications Service and Aeronautical electromagnetic spectrum utilization

5.2 Update on status of datalink applications and VHF capability sharing by States

COMMUNICATION AND SATELLITE SERVICE PROVIDER OUTAGES AND SERVICE DEGRADATIONS IMPACTING AIR TRAFFIC OPERATIONS

(Presented by FAA, United States)

SUMMARY

This paper provides discussion on the complexity of the overall data link network, the impacts of outages and degradations on air traffic services, and urges increased effort towards achieving the necessary levels of availability, communication, coordination, and performance.

1. INTRODUCTION

1.1 During Calendar Year 2023 (CY23) and CY24, the Federal Aviation Administration (FAA) has experienced several significant outages or service degradations by communication and/or satellite service providers (CSPs/SSPs) that have impacted oceanic air traffic services in all FAA delegated airspace.

1.2 These outages and degradations have resulted in unavailability of controller-pilot data link communication (CPDLC) and ADS-C position reporting, requiring controllers to revert to high-frequency (HF) voice communication via a third-party voice CSP. In addition, the loss of services means that aircraft are no longer eligible for performance-based communication and surveillance (PBCS) services, which requires controllers to revert to other forms of larger separation minima.

1.3 One of the challenges that the FAA and other air navigation service providers (ANSPs) have encountered with outages has been detection and standardized reporting of outages by CSPs/SSPs. This paper provides discussion on the

complexity and impacts of degradations and outages within the overall data link network, recently experienced impacts in FAA oceanic airspace, and urges renewed focus and energy by ANSPs towards achieving the necessary levels of availability, communication, coordination, and performance.

2. DISCUSSION

2.1 The collective network provided by the CSPs and SSPs is the backbone of the Future Air Navigation System (FANS). Their data link services are relied upon to enable the exchange of communication and surveillance messages that support efficient air traffic services. Figure 1 provides a basic overview of the complexity of the various components of the network, as well as a representation of the air and ground station sub-networks users may contract with to connect to the network.

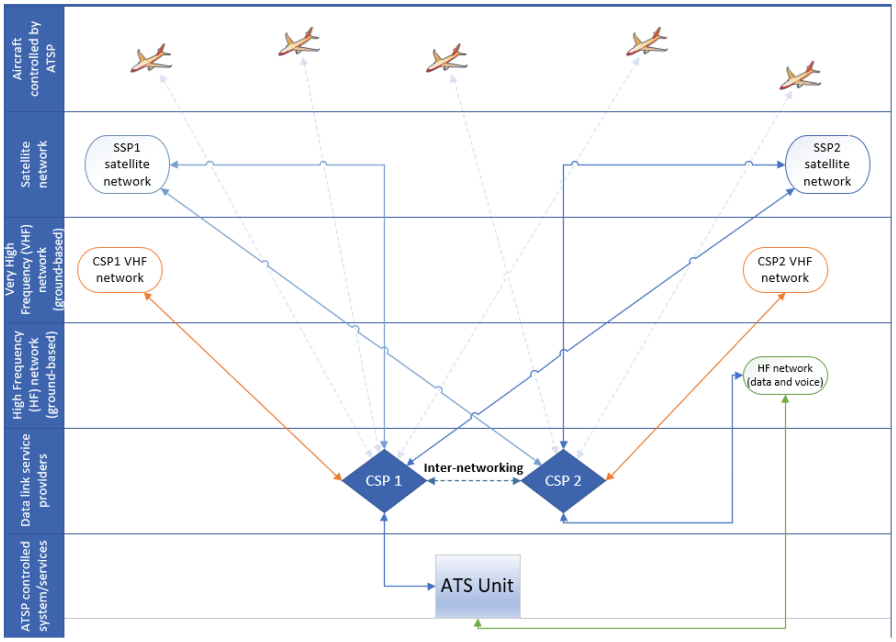

Figure 1. Overview of typical FANS data link network configuration

2.2 The operational impacts of loss of service from planned or unplanned maintenance, or outages may include:

- Data link logon and message failures (ADS-C, CPDLC)
- Losses of separation (May include cases of loss of eligibility and actual erosion below standard being applied before the outage.)
- Increased airspace complexity due to movement of aircraft to achieve required increases in separation.
- Delays in or inability to communicate with affected aircraft.
- Difficulty coordinating aircraft entering/exiting FAA controlled airspace.
- Unexpected demand for 3rd party voice provider resources (HF voice is only back up for data link)

- Increased HF voice messaging between ATC/Pilot and Pilot/Operator dispatch
- Delays and potential failures in delivery of HF voice position reports and ATC communications

It is important to note that when any segment of data link services is lost or degraded, not only are the aircraft with the lost capability impacted, but aircraft with full capability may also be impacted by less-than-optimal altitude or route changes to re-establish required separation.

2.3 Due to the dependence upon this network, it is critical for the degraded or lost services to be re-established as quickly as possible. Clear and structured communication between all parties is essential to support operational decision-making.

2.4 In Quarter 1 of CY24, the FAA experienced 36 degradations or outages impacting data link services affecting Oakland (ZOA), as well as 24 affecting Anchorage (ZAN), and 20 affecting New York (ZNY) oceanic airspace. Several of these outages also impacted FAA domestic CPDLC services. Appendix A provides a summary of the dates, services that were impacted and data link flights directly impacted (does not include flights that may not have lost service but experienced impacts) for each oceanic FIR.

2.5 The bulk of outages experienced in January and February 2024 appeared to be related to a queueing issue between Iridium and Collins/ARINC data servers. There were several changes implemented by Collins/ARINC that addressed the queuing issue and unplanned outages/degradations related to that matter appear to have been resolved.

2.6 Table 1 summarizes the availability parameters detailed in ICAO Doc 9869, PBCS Manual for required communication performance (RCP) 240/ required surveillance performance (RSP) 180.

Specification: RCP 240/D, RSP180	**Application: CPDLC, ADS-C**	**Component: CSP**
Availability parameter	**Safety**	Means of compliance
Availability — CSP (ACSP)	**0.999**	Contract/service agreement terms.
Unplanned outage duration limit (minutes).	**10**	Contract/service agreement terms.
Maximum number of unplanned outages.	**48**	Contract/service agreement terms.
Maximum accumulated unplanned outages time (minutes/year).	**520**	Contract/service agreement terms.
Unplanned outage notification delay (minutes).	**5**	Contract/service agreement terms.
Note.— RTCA DO-306/EUROCAE ED-122 specifies a requirement to indicate loss of the service. Unplanned outage notification delay is an additional time value associated with the requirement to indicate such loss to the ANSP, per RCP-related safety requirement SR-4 for the ANSP.		

Table 1. RCP240/RSP180 Availability criteria

2.7 Figure 2 illustrates the total count of unplanned outages impacting FAA oceanic airspace by service(s) affected in Q1 of FY24. Figure 3 illustrates the combined total duration of impact for unplanned outages greater than 10 minutes. Both figures indicate the annual safety target for comparison with the observed performance.

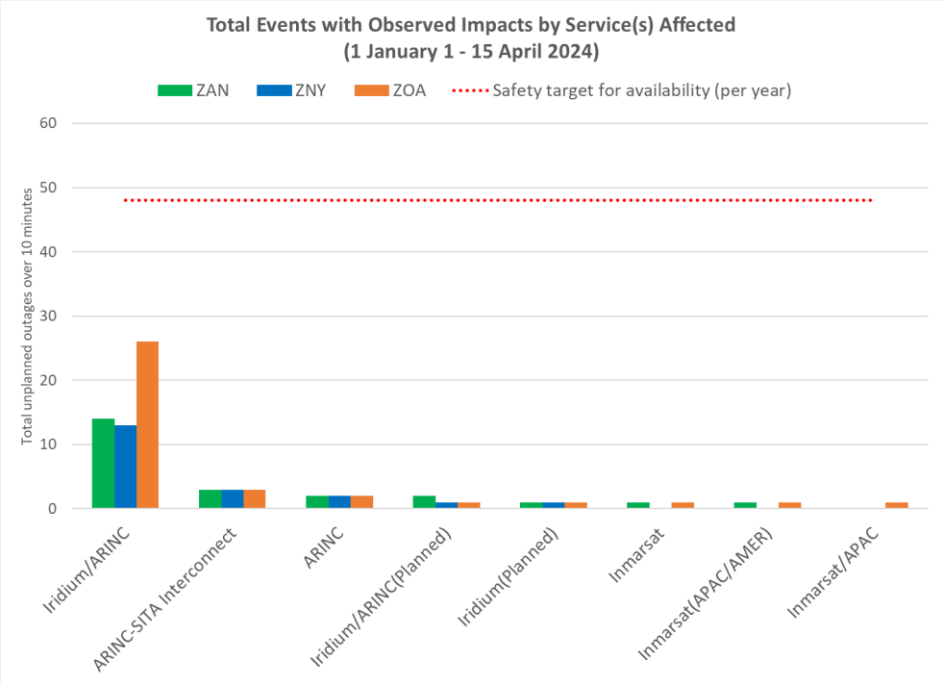

Figure 2. Total events with observed impacts by service(s) affected (1 January 1-25 March 2024)

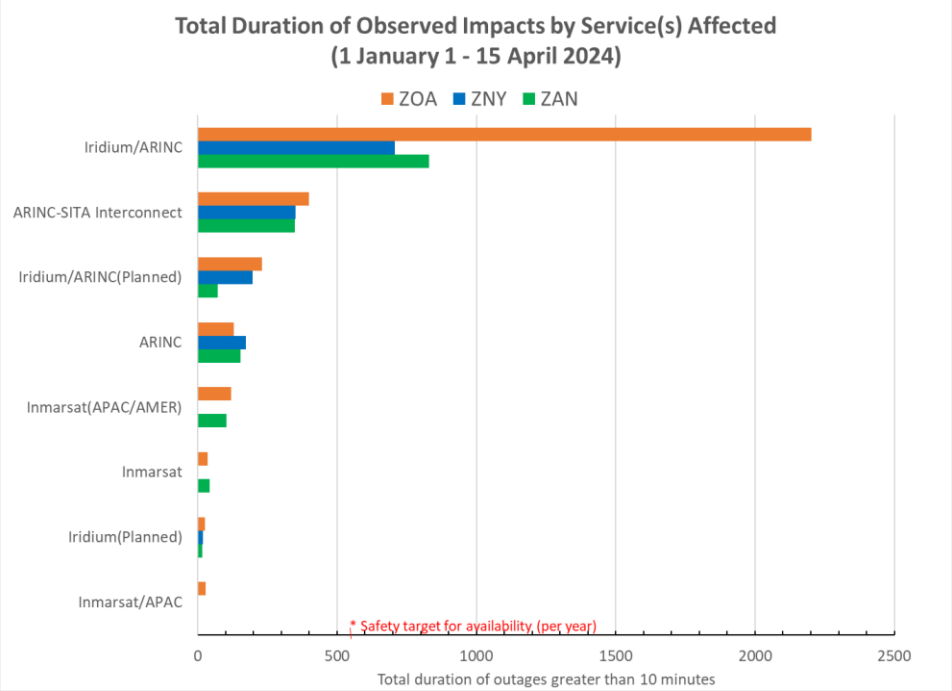

Figure 3. Total duration of observed impacts by service(s) affected (1 January 1-25 March 2024)

2.8 Figure 3 shows that the annual safety targets for duration of unplanned outages greater than 10 minutes has been exceeded for the Iridium/ARINC message delivery path during the first 3 months of 2024.

2.9 The increase in outages has raised visibility and brought higher levels of attention to the ongoing challenges with availability of the FANS data link network, as well as the with the timeliness, clarity and follow up in the notifications provided by the CSPs. The FAA is developing a new communication process to improve coordination amongst technical, operational and support personnel with responsibilities related to data link systems and services.

2.10 In addition to ongoing work with between the FAA, CSPs, SSPs, and airlines, the FAA has also participated in efforts at the ICAO North Atlantic Technical Interoperability Group (NAT TIG). In 2018, the NAT TIG created the Network Outage Detection and Reporting (NODAR) Project Team (PT) to work collectively between data link system stakeholders to improve the detection and reporting related to outages within the CSP and SSP subnetworks and systems.

2.11 In 2022, the NODAR PT was disbanded having reached the limit of what could be accomplished without further action by the CSPs and SSPs. The remaining work was rolled into the NAT TIG Work Program. While work has continued, very little progress has been made towards achieving the notifications deemed necessary by the ANSPs to support critical decision-making during data link outages and degradations caused by planned or unplanned maintenance and failures.

2.12 During the most recent NAT TIG/17 Meeting held 8-11 April, 2024 at the ICAO EURNAT Regional Office in Paris, updates on NODAR work, including a draft NODAR template and Network Outage Reporting and Impact Assessment (NORIA) Handbook were presented to the meeting in NAT TIG WP/10 (Appendix B refers). Relevant excerpts from the NAT TIG Summary of Discussions related to CSP/SSP outages are included in Appendix C.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- Note and discuss the information provided.
- Consider the NODAR template and NORIA Handbook to consider use and implementation in the Asia Pacific Region.

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Appendix A

Appendix A1. Outages in Oakland Oceanic FIR 1 January to 25 March 2024

Start of Outage	End of Outage	Duration(min)	Impacted Service	Impacted Data Link-equipped Flights
2024-01-04 23:59	2024-01-05 01:13	74	ARINC	146
2024-01-14 00:00	2024-01-14 00:36	36	Iridium/ARINC	46
2024-01-15 02:27	2024-01-15 02:58	31	Iridium/ARINC	23
2024-01-19 02:25	2024-01-19 04:08	103	Iridium/ARINC	53
2024-01-21 18:08	2024-01-21 22:34	266	Iridium/ARINC	78
2024-01-22 02:23	2024-01-22 02:49	26	Iridium/ARINC	20
2024-01-26 02:29	2024-01-26 03:35	66	Iridium/ARINC	42
2024-01-29 02:21	2024-01-29 04:10	109	Iridium/ARINC	59
2024-01-31 17:25	2024-01-31 20:11	166	Iridium/ARINC	51
2024-02-02 02:18	2024-02-02 04:28	130	Iridium/ARINC	66
2024-02-04 14:25	2024-02-04 14:54	29	Iridium/ARINC	7
2024-02-05 02:24	2024-02-05 03:08	44	Iridium/ARINC	40
2024-02-06 05:12	2024-02-06 09:09	237	Iridium/ARINC	44
2024-02-07 18:00	2024-02-07 18:17	17	Iridium/ARINC	18
2024-02-08 18:15	2024-02-08 18:52	37	Iridium/ARINC	26
2024-02-08 19:15	2024-02-08 19:42	27	Iridium/ARINC	19
2024-02-09 02:24	2024-02-09 03:45	81	Iridium/ARINC	51
2024-02-12 02:24	2024-02-12 03:03	39	Iridium/ARINC	30
2024-02-12 15:25	2024-02-12 18:33	188	Iridium/ARINC	35
2024-02-13 18:32	2024-02-13 19:27	55	ARINC	149

2024-02-13 19:27	2024-02-13 20:54	87	Iridium/ARINC	48
2024-02-16 02:31	2024-02-16 03:19	48	Iridium/ARINC	40
2024-02-21 05:08	2024-02-21 09:58	290	Iridium/ARINC	53
2024-02-25 11:42	2024-02-25 12:09	27	Inmarsat/APAC	22
2024-03-05 16:58	2024-03-05 17:17	19	Iridium/ARINC	12
2024-03-06 17:27	2024-03-06 17:53	26	Iridium(Planned)	27
2024-03-11 02:36	2024-03-11 03:13	37	Iridium/ARINC	42
2024-03-13 14:11	2024-03-13 18:01	230	Iridium/ARINC(Planned)	41
2024-03-19 03:25	2024-03-19 04:00	35	Inmarsat	50
2024-03-21 11:45	2024-03-21 13:45	120	Inmarsat(APAC/AMER)	91
2024-03-27 17:29	2024-03-27 18:00	31	Iridium/ARINC	38
2024-04-03 16:50	2024-04-03 17:30	40	Iridium/ARINC	24
2024-04-12 15:26	2024-04-12 18:18	172	ARINC-SITA Interconnect(?)	100*
2024-04-14 15:54	2024-04-14 18:55	181	ARINC-SITA Interconnect	197
2024-04-15 14:06	2024-04-15 14:53	47	ARINC-SITA Interconnect	35
2024-04-15 19:12	2024-04-15 19:30	18	Iridium/ARINC	18

*Outage on 12 April 2024Low impact to Air Traffic - mostly resulted in delayed logons for inbound flights

Appendix A2. Outages in Anchorage Oceanic FIR 1 January to 25 March 2024

Start of Outage	End of Outage	Duration(Min)	Impacted Service	Impacted Data Link-equipped Flights
2024-01-05 00:01	2024-01-05 01:13	72	ARINC	55
2024-01-19 02:25	2024-01-19 04:08	103	Iridium/ARINC	6
2024-01-26 02:29	2024-01-26 03:27	58	Iridium/ARINC	6
2024-02-02 02:21	2024-02-02 02:55	34	Iridium/ARINC	6
2024-02-04 14:47	2024-02-04 15:04	17	Iridium/ARINC	5
2024-02-05 02:39	2024-02-05 03:02	23	Iridium/ARINC	4
2024-02-06 06:21	2024-02-06 08:55	154	Iridium/ARINC	3
2024-02-09 02:28	2024-02-09 03:49	81	Iridium/ARINC	4
2024-02-12 02:33	2024-02-12 03:02	29	Iridium/ARINC	5
2024-02-12 18:02	2024-02-12 18:27	25	Iridium/ARINC	5
2024-02-13 18:38	2024-02-13 20:00	82	ARINC	23
2024-02-16 02:36	2024-02-16 03:15	39	Iridium/ARINC	5
2024-02-21 05:13	2024-02-21 07:52	159	Iridium/ARINC	6
2024-02-21 08:59	2024-02-21 09:58	59	Iridium/ARINC	3
2024-03-06 17:36	2024-03-06 17:53	17	Iridium(Planned)	4
2024-03-11 02:33	2024-03-11 03:04	31	Iridium/ARINC	10
2024-03-13 15:02	2024-03-13 16:00	58	Irdiium/ARINC(Planned)	4
2024-03-13 17:15	2024-03-13 17:29	14	Irdiium/ARINC(Planned)	4
2024-03-19 03:25	2024-03-19 04:03	42	Inmarsat	14
2024-03-21 11:36	2024-03-21 13:19	103	Inmarsat(APAC/AMER)	41
2024-03-27 17:35	2024-03-27 17:54	19	Iridium/ARINC	3

2024-04-12 15:31	2024-04-12 18:12	161	ARINC-SITA Interconnect(?)	35*
2024-04-14 16:09	2024-04-14 18:56	167	ARINC-SITA Interconnect	38
2024-04-15 14:29	2024-04-15 14:50	21	ARINC-SITA Interconnect	14

*Outage on 12 April 2024Low impact to Air Traffic - mostly resulted in delayed logons for inbound flights

Appendix A3. Outages in New York Oceanic FIR 1 January to 25 March 2024

Start of Outage	End of Outage	Duration(Min)	Impacted Service	Impacted Data Link-equipped Flights
2024-01-05 00:00	2024-01-05 01:14	74	ARINC	66
2024-01-26 02:34	2024-01-26 03:23	49	Iridium/ARINC	6
2024-01-29 02:25	2024-01-29 03:00	35	Iridium/ARINC	3
2024-01-29 03:14	2024-01-29 03:43	29	Iridium/ARINC	3
2024-01-31 17:25	2024-01-31 20:11	166	Iridium/ARINC	21
2024-02-06 05:11	2024-02-06 06:33	82	Iridium/ARINC	10
2024-02-08 18:14	2024-02-08 18:37	23	Iridium/ARINC	7
2024-02-08 19:00	2024-02-08 19:11	11	Iridium/ARINC	5
2024-02-12 15:17	2024-02-12 17:50	153	Iridium/ARINC	12
2024-02-13 18:36	2024-02-13 20:14	98	ARINC	62
2024-02-13 20:36	2024-02-13 20:54	18	Iridium/ARINC	5
2024-02-21 05:17	2024-02-21 06:13	56	Iridium/ARINC	4
2024-03-05 17:00	2024-03-05 17:16	16	Iridium/ARINC	7
2024-03-06 17:35	2024-03-06 17:53	18	Iridium(Planned)	17
2024-03-13 14:02	2024-03-13 17:18	196	Iridium/ARINC(Planned)	10
2024-03-27 17:06	2024-03-27 17:57	51	Iridium/ARINC	8
2024-04-12 16:22	2024-04-12 18:21	119	ARINC-SITA Interconnect(?)	42*

2024-04-14 16:09	2024-04-14 19:06	177	ARINC-SITA Interconnect	105
2024-04-14 14:01	2024-04-14 14:56	55	ARINC-SITA Interconnect	56
2024-04-15 19:12	2024-04-15 19:30	18	Iridium/ARINC	4

*Outage on 12 April 2024Low impact to Air Traffic - mostly resulted in delayed logons for inbound flights

European and North Atlantic Office

[Category]

NETWORK OUTAGE REPORTING AND IMPACT ASSESSMENT HANDBOOK

NORTH ATLANTIC REGION

First Edition

v2024-1 Draft

North Atlantic North Atlantic Technology and Interoperability Group (NAT TIG)

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DISCLAIMER

This document has been prepared by the ICAO North Atlantic Technology and Interoperability Group (NAT TIG) and is intended to provide guidance material regarding network outage reporting and impact assessment for communication service providers, satellite service providers and NAT air traffic service providers. The document also provides a vehicle for maintaining a table of ACARS path identifiers.

The NAT TIG takes no responsibility for the accuracy of the material in the document which is based on the best evidence to date. It is quite conceivable that methods will be further developed and refined as more data becomes available which will result in a revision to the document.

TABLE OF CONTENTS

RECORD OF AMENDMENTS

NAT TIG – NETWORK OUTAGE REPORTING AND IMPACT ASSESSMENT HANDBOOK

The table below is provided to keep a record of amendments.

Amdt. Number	Effective Date	Details

CHAPTER 1: INTRODUCTION

1.1 Introduction

1.1.1 The NAT Network Outage Reporting and Impact Assessment (NORIA) handbook is intended to provide guidance material regarding network outage reporting and impact assessment for Communication Service Providers (CSPs), Satellite Service Providers (SSPs) and NAT Air Traffic Service Providers (ATSPs).

1.1.2 The document provides a standard framework for CSPs and SSPs for reporting network degradation, outages and scheduled maintenance to ANSPs. This includes a standard reporting e-mail template and common taxonomy. This will facilitate common understanding between CSPs, SSPs and ATSPs and will enable ATSP to analyse the operational effect of network outages on air traffic control.

1.1.3 The e-mail notifications are received from SITA and Collins from the e-mail addresses service.advisories@sitaonair.aero and OPS_HD@arinc.com.

1.1.4 The NORIA handbook also provides a vehicle for maintaining an up-to-date table of ACARS path identifiers until a suitable method is found for maintaing such information on a global basis.

1.1.5 The material in the NORIA handbook is maintained by the NAT Technical and Interoperability Group (NAT TIG) and will be updated as required.

1.1.6 Aviation Data Communication Corporation (ADCC) has not yet been factored into this document.

1.2 Aircraft equipage statistics in the NAT region

1.2.1 Aircraft equipage statistics are provided here to help ATSPs estimate the impact of outages or planned maintenance on ATC.

Inmarsat Classic	87%
Inmarsat SB-S 1.0	2%
Inmarsat SB-S 2.0	1%
Iridium Legacy	10%
Iridium Certus	0%

CHAPTER 2: OUTAGE REPORTING

2.1 E-mail notification template

2.1.1 The following e-mail notification template will be used by Collins and SITA to submit notifications about planned or unplanned events that may affect the network ability to deliver data link messages.

2.1.2 E-mail notifications shall contain the Subject line and any of the listed items as required.

2.1.3 For significant ongoing events, it is recommended that updates are provided every 30 minutes.

Template:

Subject line: Type - Status - Service

- **Type:** [Planned|Unplanned] [maintenance|degradation|outage]
- **Reference:** [reference number]
- **Status:** [Advanced notice|Postponed|Cancelled|Open|Update|Correction|Resolved|Closed|Post-incident]
- **Service:** [See list below]
- **Location:** [only for VDL ground stations or SITA and Collins sites [1)]]
- **Impacted Coverage:** [GLOBAL|one or more ARINC, SITA, ADCC ACARS path Identifiers [2)]]
- **Impact to service:** [No impact|Intermittent|Limited functionality|No service]
- **First advisory issued at:** [DD-MMM-YY HH:MM:SS] UTC
- **Start Time:** [DD-MMM-YY HH:MM:SS] UTC
- **End Time:** [DD-MMM-YY HH:MM:SS] UTC
- **Duration:** [X] hours [X] minutes [X] seconds
- **Estimated Duration:** [X] minutes (only for maintenance notifications)
- **Text:** [General text as required]

Notes:

1) SITA and Collins sites: for example Montreal, Singapore, Annapolis.

2) See a table of ACARS path identifiers in section 2.3.

2.2 Services

The following services have been defined (AIRCOM = SITA and ARINC = Collins):

- [AIRCOM|ARINC] – VHF/VDL
- [AIRCOM|ARINC] – Inmarsat SB-S
- [AIRCOM|ARINC] – Inmarsat SB-S ACARS
- [AIRCOM|ARINC] – Inmarsat SB-S Voice
- [AIRCOM|ARINC] – Inmarsat Classic
- [AIRCOM|ARINC] – Inmarsat Classic ACARS
- [AIRCOM|ARINC] – Inmarsat Classic Voice
- [AIRCOM|ARINC] – Iridium Legacy
- [AIRCOM|ARINC] – Iridium Legacy ACARS
- [AIRCOM|ARINC] – Iridium Legacy Voice
- [AIRCOM|ARINC] – Iridium Certus
- [AIRCOM|ARINC] – Iridium Certus ACARS
- [AIRCOM|ARINC] – Iridium Certus Voice
- [AIRCOM|ARINC] – FANS Managed service (ADS-C/CPDLC)
- [AIRCOM|ARINC] – ATS SATVOICE
- [ARINC] – ARINC HF

2.3 ACARS path identifiers

Satellite Service Provider (SSP)	Satellite	Service	Ground Station Location	ARINC ACARS Identifiers	SITA ACARS Identifiers	ADCC ACARS Identifiers
Iridium	All	Short Burst Data	Primary: Tempe, Arizona, US Secondary: None	IG1	IGW1	N/A
Inmarsat	AORE (3F5 at 54°W)	Classic Aero	Laurentides, Canada	XXN	AOE6	B3E
		Swift Broadband-Safety 1.0	N/A	N/A	N/A	N/A
		Swift Broadband-Safety 2.0	N/A		N/A	N/A
	EMEA (AF1 at 25°E)	Classic Aero over I-4	Fucino, Italy	XXF	EUA1	B4E
		Swift Broadband-Safety 1.0	Primary: Fucino, Italy Secondary: Thermopylae, Greece	X4E, X5E	EUA9	B1E
		Swift Broadband-Safety 2.0		X0E, X3E (Pau g/w)	EUA7 (Pau g/w)	TBD
				X1E, X2E (Bur g/w)	EUA8 (Bur g/w)	TBD
	APAC (4F2 at 143.5°E)	Classic Aero over I-4	Paumalu, Hawaii, US	XXA	APK1	B4P
		Classic Aero over I-4 (virtual I-3 POR)	Warkworth, New Zealand	XXP	APK2	B3P
		Swift Broadband-Safety 1.0	Primary: Paumalu, Hawaii, US Secondary: Auckland, New Zealand	X4P, X5P	APK9	B1P
		Swift Broadband-Safety 2.0		X2P, X3P (Pau g/w) X0P, X1P (Bur g/w)	APK7 (Pau g/w) APK8 (Bur g/w)	TBD
	AMER (4F3 at 98°W)	Classic Aero over I-4	Primary: Paumalu, Hawaii, US Secondary: Laurentides, Canada	XXH	AME1	B4A
		Classic Aero over I-4 (virtual I-3 AORW)	Laurentides, Canada	XXW	AME2	B3W
		Swift Broadband-Safety 1.0	Primary: Paumalu, Hawaii, US Secondary: Laurentides, Canada	X4A, X5A	AME9	B1A
		Swift Broadband-Safety 2.0		X2A, X3A (Pau g/w) X0A, X1A (Bur g/w)	AME7 (Pau g/w) AME8 (Bur g/w)	TBD
	IOR/IOE (6F1 at 83.5°)	Classic Aero over I-4 (IOR)	Primary: Perth, Australia Rainfade & Secondary RFS: Merredin, Australia	XXI	IOR5	B3I
		Swift Broadband-Safety 1.0 (IOE)	Primary: Perth, Australia Secondary: Merredin, Australia	X4I, X5I	IOR9	B1I
		Swift Broadband-Safety 2.0 (IOE)		X2I, X3I (Pau g/w) X0I, X1I (Bur g/w)	IOR7 (Pau g/w) IOR8 (Bur g/w)	TBD

CHAPTER 3: NOTIFICATION CONTENT

3.1 Type

3.1.1 The following categories are possible:

Planned maintenance

Unplanned degradation

Unplanned outage

3.2 Reference

3.2.1 This is the reference number that Collins and SITA assign to an event. Subsequent notifications regarding the same event will carry the same reference number.

3.3 Status

3.3.1 The following statuses are possible:

Advanced notice	Advanced notice of maintenance activities.
Postponed	Maintenance activities are postponed.
Cancelled	Maintenance activities are cancelled.
Open	Event is open.
Update	Notification provides an update on an event.
Correction	Notification corrects a previous notification.
Resolved	Degradation or outage has been resolved.
Closed	Event has been closed.
Post-incident	Notification provides details about a closed event.

3.4 Service

3.4.1 See a list of services in section 2.1 and a description of each service in chapters 4 and 5.

3.5 Location

3.5.1 Location if used when the maintenance, degradation or outage is confined to a specific site such as:

a) VDL ground station.

b) Collins or SITA sites such as Annapolis, Montreal, Singapore.

3.6 Impacted coverage

3.6.1 Impacted coverage can be:

a) "GLOBAL";or

b) One or more ACARS path identifiers.

3.7 Impact to service

3.7.1 Impacted to service can be one of the following:

No impact	Usually used to indicate that planned maintenance will have no impact on service.
Intermittent	Indicates intermittent availability of the network as a whole or via the indicated paths as applicable. Some messages may be delivered but ATC should not rely on the service.
Limited functionality	?????
No service	The network as a whole or the indicated paths as applicable are not available.

3.8 First advisory issued at

3.8.1 Indicates the time the first advisory for this event was issued.

3.9 Start Time

3.9.1 Indicates the start time of the degradation/outage or the planned start time of the maintenance.

3.10 End Time

3.10.1 Indicates the end time of the event.

3.11 Duration

3.11.1 Indicates the duration of the event.

3.12 Estimated Duration

3.12.1 Indicates the estimated duration of the planned maintenance.

3.12.2 If the notification states that there will be a short outage (1-5 minutes) it is normally allowed to continue using PBCS separation however, ATCOs should be advised of the expected outage.

3.13 Text

3.13.1 General text provided for added information.

CHAPTER 4: IMPACT DETERMINATION - IRIDIUM

4.1 System description

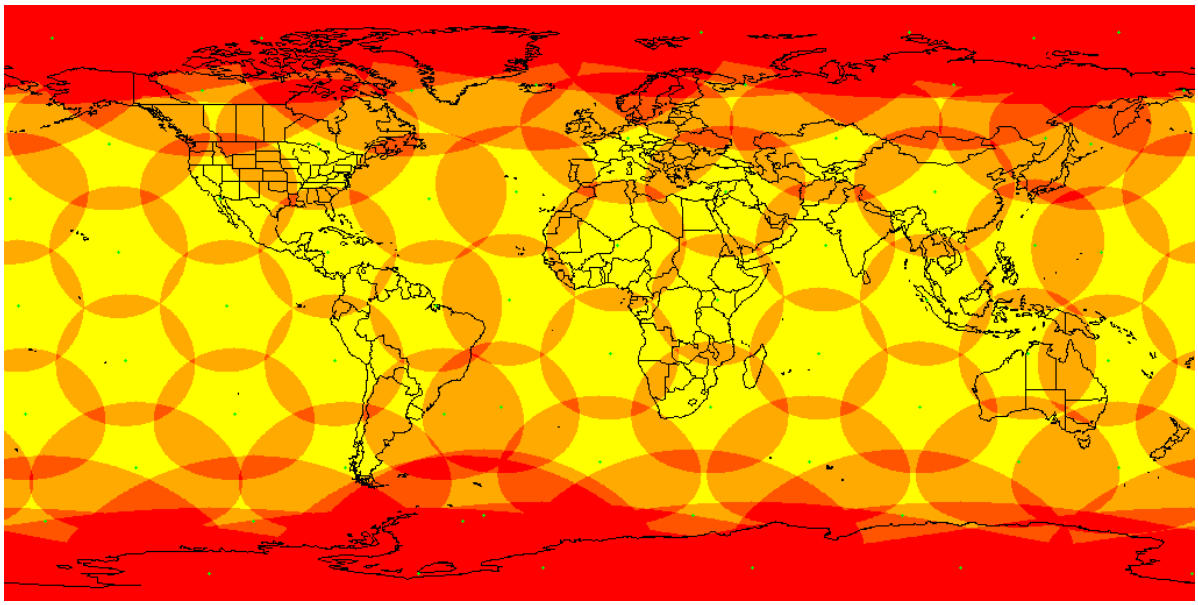

Figure 1. Iridium satellite system

4.1.1 66 Iridium satellites, which travel from north-to-south and south-to-north cover the entire globe. The following Iridium ground stations serve the NAT region:

- Tempe, Arizona
- Fairbanks, Alaska
- Svalbard, Norway
- Punta Arenas, Chile

4.2 Iridium Services

4.2.1 Iridium Legacy provides the ability of voice communications and data exchange at low speeds of 2.4 kbps with true global coverage, including the poles.

4.2.2 Iridium Certus provides broadband satellite services for voice communications and data exchange capable of up to 704 kbps of bandwidth with true global coverage, including the poles.

4.2.3 **Iridium Legacy** means that both Iridium Legacy ACARS and Voice services are affected.

4.2.4 **Iridium Legacy ACARS** means that Iridium Legacy Voice services are not affected.

4.2.5 **Iridium Legacy Voice** means that Iridium Legacy ACARS services are not affected.

4.2.6 **Iridium Certus** means that both Iridium Certus ACARS and Voice services are affected.

4.2.7 **Iridium Certus ACARS** means that Iridium Certus Voice services are not affected.

4.2.8 **Iridium Certus Voice** means that Iridium Certus ACARS services are not affected.

4.2.9 **FANS Managed service (ADS-C/CPDLC)** could mean a limitation or failure of Iridium data link services depending on the indicated coverage.

4.2.10 **ATS SATVOICE** could mean a limitation or failure of Iridium SATVOICE services depending on the indicated coverage.

4.2.11 The air traffic controller does not know which aircraft are equipped with Iridium Legacy and which are equipped with Iridium Certus unless the ground system extracts this information from the downlink messages. This information is not indicated in the ICAO flight plan.

4.3 Coverage

4.3.1 Impacted coverage = "Global" means that global Iridium coverage is affected for the stated service.

4.3.2 Impacted coverage = IG1 means that global Iridium coverage is affected for the stated service via Collins.

4.3.3 Impacted coverage = IGW1 means that global Iridium coverage is affected for the stated service via SITA.

4.4 Failure scenarios

Satellite failure

4.4.1 TBD (need text about gaps when single satellites fail and spare satellites in orbit).

Ground station failure

4.4.2 The Iridium system only needs one operational ground station for the system to be fully functional. Three ground stations can therefore fail before connection to the satellites is lost.

Path failures

4.4.3 There are only two paths defined to the Iridium satellites, one for Collins and one for SITA. Failure of those paths means a loss of service via Collins and/or SITA.

Example: If IG1 fails, there is no alternative path between Collins and the Iridium satellites.

Example: If IGW1 fails, there is no alternative path between SITA and the Iridium satellites.

4.5 Recommended actions

4.5.1 The table below provides recommended actions:

[AIRCOM|ARINC] – Iridium Legacy	Failure in the [AIRCOM|ARINC] SATVOICE and data link system affecting Iridium Legacy aircraft. It is not known which Iridium aircraft are connected through [AIRCOM|ARINC] and which aircraft are Legacy and therefore unknown which Iridium aircraft will lose SATVOICE and data link connection. Inmarsat aircraft are not affected. PBCS separation shall not be applied to Iridium aircraft.

IMPACT determination - iridium

[AIRCOM|ARINC] – Iridium Legacy ACARS	Failure in the [AIRCOM|ARINC] data link system affecting Iridium Legacy aircraft. It is not known which Iridium aircraft are connected through [AIRCOM|ARINC] and which aircraft are Legacy therefore unknown which Iridium aircraft will lose data link connection. Inmarsat aircraft are not affected. PBCS separation shall not be applied to Iridium aircraft.
[AIRCOM|ARINC] – Iridium Legacy Voice	Failure in the [AIRCOM|ARINC] SATVOICE system affecting Iridium Legacy aircraft. It is not known which Iridium aircraft are connected through [AIRCOM|ARINC] and which aircraft are Legacy and therefore unknown which Iridium aircraft will lose SATVOICE connection. Inmarsat aircraft are not affected.
[AIRCOM|ARINC] – Iridium Certus	Failure in the [AIRCOM|ARINC] SATVOICE and data link system affecting Iridium Certus aircraft. It is not known which Iridium aircraft are connected through [AIRCOM|ARINC] and which aircraft are Certus and therefore unknown which Iridium aircraft will lose SATVOICE and data link connection. Inmarsat aircraft are not affected. PBCS separation shall not be applied to Iridium aircraft.
[AIRCOM|ARINC] – Iridium Certus ACARS	Failure in the [AIRCOM|ARINC] data link system affecting Iridium Certus aircraft. It is not known which Iridium aircraft are connected through [AIRCOM|ARINC] and which aircraft are Certus therefore unknown which Iridium aircraft will lose data link connection. Inmarsat aircraft are not affected. PBCS separation shall not be applied to Iridium aircraft.
[AIRCOM|ARINC] – Iridium Certus Voice	Failure in the [AIRCOM|ARINC] SATVOICE system affecting Iridium Certus aircraft. It is not known which Iridium aircraft are connected through [AIRCOM|ARINC] and which aircraft are Certus and therefore unknown which Iridium aircraft will lose SATVOICE connection. Inmarsat aircraft are not affected.

CHAPTER 5: IMPACT DETERMINATION - INMARSAT

5.1 System description

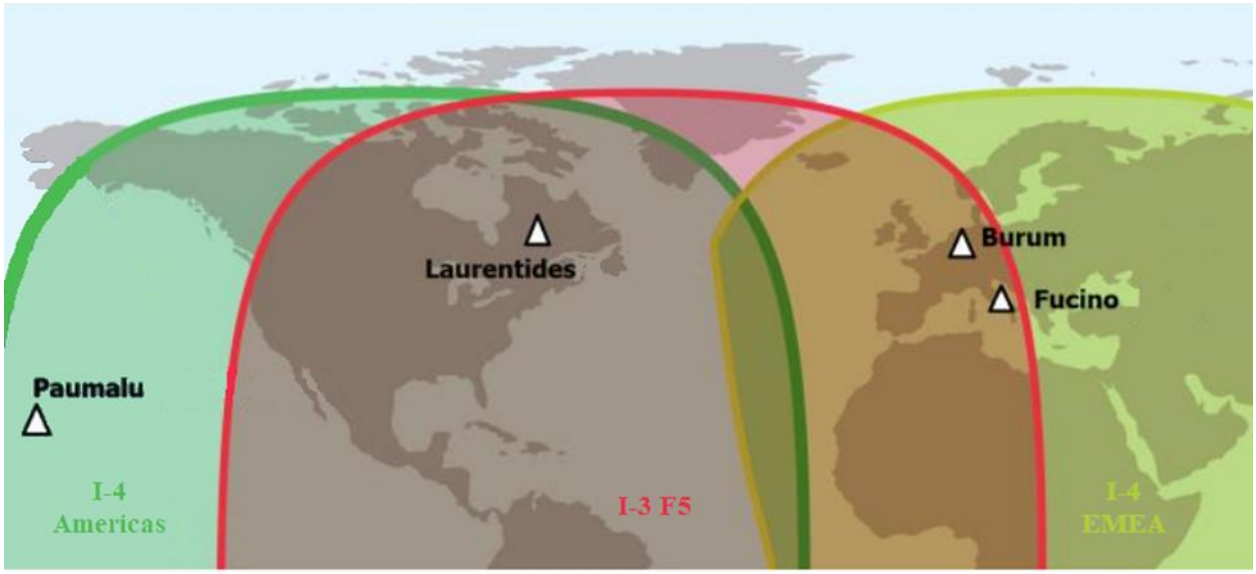

Figure 2. Inmarsat system serving the NAT

Figure needs to be updated, add Thermopylae and delete Burum

5.1.1 Three Inmarsat satellites serve the NAT Region:

AMER: Classic Aero and Swift Broadband Safety (SB-S versions 1.0 and 2.0) (green line).

EMEA: Classic Aero and Swift Broadband Safety (SB-S versions 1.0 and 2.0) (yellow line).

AORE: Classic Aero (red line).

5.1.2 The northernmost coverage of all three satellites extends to approximately 82N and then slopes southward to the east and west of the satellite centre of coverage.

5.1.3 Four Ground Earth Stations (GES) and Satellite Access Stations (SAS) serve the NAT region:

- Paumalu: Classic Aero (GES) and Swift Broadband Safety (SAS)
- Laurentides: Classic Aero (GES) and backup station for Swift Broadband Safety (SAS)
- Fucino: Classic Aero (GES) and backup station for Swift Broadband Safety (SAS)
- Thermopylae: Swift Broadband Safety (SAS)

5.1.4 For Classic Aero, the data processing gateways form part of the Ground Earth Stations. For SB-S, the data processing gateways are separate from the Satellite Access Stations and the processing may take place away from the receiving SAS. An example of this is that the Burum gateway may process data from the AMER satellite (refer to the ACARS path identifier table). This provides another layer of resilience for the service where either of the redundant gateways can process traffic from all of the SB-S capable satellites. Hence Burum and Paumalu gateways are listed against all SB-S capable satellites for SB-S 2.0.

5.2 Inmarsat Services

5.2.1 Inmarsat Classic provides the ability of voice communications and data exchange at low speeds of 10.5 kbps with coverage to approximately 82N and 82S.

5.2.2 Inmarsat SB-S provides broadband satellite services for voice communications and data exchange capable of up to 1.7 mbps of bandwidth with coverage to approximately 82N and 82S.

5.2.3 **Inmarsat Classic** means that both Inmarsat Classic ACARS and Voice services are affected.

5.2.4 **Inmarsat Classic ACARS** means that Inmarsat Classic Voice services are not affected.

5.2.5 **Inmarsat Classic Voice** means that Inmarsat Classic ACARS services are not affected.

5.2.6 **Inmarsat SB-S** means that both Inmarsat SB-S ACARS and Voice services are affected.

5.2.7 **Inmarsat SB-S ACARS** means that Inmarsat SB-S Voice services are not affected.

5.2.8 **Inmarsat SB-S Voice** means that Inmarsat SB-S ACARS services are not affected.

5.2.9 **FANS Managed service (ADS-C/CPDLC)** could mean a limitation or failure of Inmarsat data link services depending on the indicated coverage.

5.2.10 **ATS SATVOICE** could mean a limitation or failure of Inmarsat SATVOICE services depending on the indicated coverage.

5.2.11 The air traffic controller does not know which aircraft are equipped with Inmarsat Classic and which are equipped with Inmarsat SB-S unless the ground system extracts this information from the downlink messages. This information is not indicated in the ICAO flight plan.

5.3 Inmarsat Coverage

5.3.1 Impacted coverage = “Global” means that global Inmarsat coverage is affected for the stated service.

5.3.2 ACARS identifiers in the notification “Coverage” field indicate which path is affected by the notification event. ANSPs need to compare the ACARS identifiers in the notification e-mail to the ACARS identifiers in the table of ACARS identifiers to establish if an alternative path exists for the satellite. If no alternative path exists, then the satellite footprint is lost from the coverage.

AMER satellite

Classic Aero: Redundancy exists via the Paumalu and Laurentides ground stations and the AORE satellite.

ARINC: Two paths XXH, XXW.

SITA: Two paths AME1, AME2.

Example: If XXH fails, an alternative path exists via XXW. If AME2 fails, an alternative path exists via AME1.

SB-S 1.0: Ground station redundancy exists via Paumalu and Laurentides. No satellite redundancy exists.

ARINC: Two paths X4A, X5A.

SITA: One path AME9.

SB-S 2.0: Ground station redundancy exists via Paumalu and Laurentides. No satellite redundancy exists.

ARINC: Four paths X0A, X1A, X2A, X3A.

SITA: Two paths AME7, AME8.

EMEA satellite

Classic Aero: No ground station redundancy, only ground station is Fucino. Redundancy exist via the AORE satellite.

ARINC: One path XXF.

SITA: One path EUA1.

Example: If XXF fails, there is no alternative path. If EUA1 fails, there is no alternative path.

SB-S 1.0: Ground station redundancy exists via Fucino and Thermopylae. No satellite redundancy exists.

ARINC: Two paths X4E, X5E.

SITA: One path EUA9.

SB-S 2.0: Ground station redundancy exists via Fucino and Thermopylae. No satellite redundancy exists.

ARINC: Four paths X0E, X1E, X2E, X3E.

SITA: Two paths EUA7, EUA8.

AORE satellite

Classic Aero: No ground station redundancy, only ground station is Laurentides. Redundancy exists via the AMER and EMEA satellites south of approximately 75N.

ARINC: One path XXN.

SITA: One path AOE6.

Example: If XXN fails, there is no alternative path. If AOE6 fails, there is no alternative path.

SB-S 1.0: No service.

SB-S 2.0: No service.

5.4 Failure scenarios

Satellite failure

5.4.1 If a satellite fails, its footprint will completely disappear. A satellite failure would be indicated by listing in the outage notification all the paths that lead to that satellite.

5.4.2 ATC does not know which aircraft are Classic Aero and SB-S and will therefore not know which aircraft can make use of the AORE satellite in case of AMER or EMEA failure.

AMER failure:

Classic Aero: Aircraft will switch to the AORE satellite.

SB-S: No redundancy and connection will be lost if outside VHF coverage.

EMEA failure:

Classic Aero: Aircraft will switch to the AORE satellite.

SB-S: No redundancy and connection will be lost if outside VHF coverage.

AORE failure:

Classic Aero: Aircraft will switch to the AMER or EMEA satellite south of approximately 75N. Connection will be lost with aircraft north of approximately 75N.

SB-S: No service provided.

Ground station failure

Paumalu failure:

Classic Aero: Alternate path is available via the Laurentides ground station.

SB-S: Alternate path is available via the Laurentides ground station.

Laurentides failure:

Classic Aero: Alternate path is available via the Paumalu ground station.

SB-S: Alternate path is available via the Paumalu ground station.

Fucino failure:

Classic Aero: No redundancy and connection will be lost if outside VHF coverage.

SB-S: Alternate path is available via the Thermopylae ground station.

Thermopylae failure:

Classic Aero: No service provided.

SB-S: Alternate path is available via the Fucino ground station.

Path failures

5.4.3 There is a lot of redundancy build into the Inmarsat system. Individual paths can therefore fail without loss of service. ANSP should use the table of ACARS path identifiers in Chapter 2 to identify if a path failure results in loss of service via the respective satellite footprint or not.

Example: If EUA1 fails, there is no alternative Classic Aero path for the EMEA satellite, however aircraft will switch to the AORE satellite.

Example: If X2A fails, there are alternative paths via X0A, X1A and X3A.

5.5 Recommended actions

5.5.1 The table below provides recommended actions when no alternative paths or satellites are available.

[AIRCOM|ARINC] – Inmarsat Classic	Failure in the [AIRCOM|ARINC] SATVOICE and data link system affecting Inmarsat Classic aircraft. It is not known which Inmarsat aircraft are connected through [AIRCOM|ARINC] and which aircraft are Classic and therefore unknown which Inmarsat aircraft will lose SATVOICE and data link connection. Iridium aircraft are not affected. PBCS separation shall not be applied to Inmarsat aircraft.
[AIRCOM|ARINC] – Inmarsat Classic ACARS	Failure in the [AIRCOM|ARINC] data link system affecting Inmarsat Classic aircraft. It is not known which Inmarsat aircraft are connected through [AIRCOM|ARINC] and which aircraft are Classic therefore unknown which Inmarsat aircraft will lose data link connection. Iridium aircraft are not affected. PBCS separation shall not be applied to Inmarsat aircraft.
[AIRCOM|ARINC] – Inmarsat Classic Voice	Failure in the [AIRCOM|ARINC] SATVOICE system affecting Inmarsat Classic aircraft. It is not known which Inmarsat aircraft are connected through [AIRCOM|ARINC] and which aircraft are Classic and therefore unknown which Inmarsat aircraft will lose SATVOICE connection. Iridium aircraft are not affected.
[AIRCOM|ARINC] – Inmarsat SB-S	Failure in the [AIRCOM|ARINC] SATVOICE and data link system affecting Inmarsat SB-S aircraft. It is not known which Inmarsat aircraft are connected through [AIRCOM|ARINC] and which aircraft are SB-S and therefore unknown which Inmarsat aircraft will lose SATVOICE and data link connection. Iridiumt aircraft are not affected. PBCS separation shall not be applied to Inmarsat aircraft.
[AIRCOM|ARINC] – Inmarsat SB-S ACARS	Failure in the [AIRCOM|ARINC] data link system affecting Inmarsat SB-S aircraft. It is not known which Inmarsat aircraft are connected through [AIRCOM|ARINC] and which aircraft are SB-S therefore unknown which Inmarsat aircraft will lose data link connection. Iridium aircraft are not affected. PBCS separation shall not be applied to Inmarsat aircraft.
[AIRCOM|ARINC] – Inmarsat SB-S Voice	Failure in the [AIRCOM|ARINC] SATVOICE system affecting Inmarsat SB-S aircraft. It is not known which Inmarsat aircraft are connected through [AIRCOM|ARINC] and which aircraft are SB-S and therefore unknown which Inmarsat aircraft will lose SATVOICE connection. Iridium aircraft are not affected.

_____

CHAPTER 6: IMPACT DETERMINATION – COLLINS AND SITA

6.1 System description

6.1.1 **There are up to five independent systems that are involved in delivering an uplink message to the aircraft:**

a) The CSP FANS Gateway: This is the system that receives the uplink message from the ANSP and manages further delivery of the message.

b) The CSP central message processor: The core system within the CSP domain that processes messages and controls the attempts to deliver the uplink messages via the various transmission media that are available to the CSP.

c) The VHF Remote Ground Stations (RGS).

d) The Satellite gateways and stations: Classic Aero Ground Earth Stations (GES) and SwiftBroadband-Safety Gateways (AGGW) and Iridium Gateways.

e) The HF ground stations.

6.1.2 When a FANS message is sent from the ANSP it is delivered to the Communication Service Provider (CSP). The CSP FANS Gateway is the network interface to the ANSP. The ANSPs address all their ATC uplink messages to the CSP FANS Gateway which then acts as the broker for delivery of the FANS uplink. The CSP FANS Gateway does this by keeping track of the aircraft activity and connection options across different CSP networks which can include ARINC, SITA, ADCC, AEROTHAI, DECEA & AVICOM[1]. The FANS Gateway receives Media Advisory Downlinks from each of the CSPs to track the aircraft connection options. The media advisories are key to successful delivery of uplink messages. Only ARINC and SITA provide VHF data services in the NAT and this paper will therefore only focus on these two companies regarding the VHF data services.

6.1.3 A media advisory is an ACARS downlink message which is intended to advise ground systems that, at the indicated time, the airplane gained or lost communications via a particular medium and which datalink media are available to the airplane. Airplanes generally consider four media for media advisories.

6.1.4 Media advisories are particularly important in the case when internetworking is necessary because the airplane is connected to one CSP but the ATC facility is connected to another CSP. In that case, the CSP that is connected to the airplane and receives media advisories from it should forward them to the other CSP so that the other CSP is aware whether and how it can send uplink messages from the ATC facility to the airplane.

6.1.5 When the CSP FANS Gateway receives an uplink for delivery, it develops a plan for delivery of the message. Using logic and rules (media advisories are a key factor; other proprietary rules and logic are also applied) it will progressively send the ATC Uplink to each potential CSP central processor address (ARINC, SITA, ADCC, AVICOM, DECEA, AEROTHAI, however in the NAT only ARINC and SITA are

[1] ADCC: Aviation Data Corp of China. The VHF DSP (POA/VDL) in China. An ARINC Partner.
AEROTHAI: Aeronautical Radio of Thailand. ARINC's VHF (POA/VDL) DSP partner throughout Asia and the South Pacific (excluding China).
DECEA: SITA's (POA/VDL) VHF Partner in Brazil.
AVICOM: Aviation Communications of Japan. The POA/VDL DSP exclusive to Japan supporting internetworking with both ARINC and SITA.

relevant). It will choose the CSP central processor that is most likely to be communicating with the aircraft. The CSP FANS Gateway tries each CSP central processor sequentially until it is successful or all CSP central processors have tried, and the message is unsuccessful.

6.1.6 ATC does not have information on the following:

a) if aircraft are connected to Collins or SITA.

b) if aircraft are Inmarsat Classic Aero or SB-S.

c) if aircraft are Iridium Legacy or Certus.

6.1.7 In certain failure conditions, it can therefore be difficult for ATC to determine which aircraft will lose communication and which aircraft can swich to an alternative path.

Example: If EUA9 fails, ATC will not know which aircraft are connected to SITA and which aircraft are SB-S. ATC only knows that some aircraft may lose connection.

6.2 Failure scenarios

Processing failure at Collins or SITA

6.2.1 Failure at Collins or SITA will be indicated with one or both of the following in the Service field in the notification e-mail:

FANS Managed service (ADS-C/CPDLC); or

ATS SATVOICE

6.2.2 Since ATC does not know which aircraft are connected to Collins and SITA, ATC will only know that some aircraft will lose connection, but the extent will not be known.

Internetworking failure

FANS Managed service (ADS-C/CPDLC); or

ATS SATVOICE

6.2.3 Since ATC does not know which aircraft are connected to Collins and SITA, ATC will only know that some aircraft will lose connection, but the extent will not be known.

6.3 Recommended actions

6.3.1 The table below provides recommended actions when no alternative paths or satellites are available.

[AIRCOM|ARINC] – FANS Managed service (ADS-C/CPDLC)	Failure in the [AIRCOM|ARINC] system affecting data link. It is not known which aircraft are connected through [AIRCOM|ARINC] and therefore unknown which aircraft will lose data link connection. PBCS separation shall not be applied

[AIRCOM|ARINC] – ATS SATVOICE	Failure in the [AIRCOM|ARINC] system affecting SATVOICE. It is not known which aircraft are connected through [AIRCOM|ARINC] and therefore unknown which aircraft will lose SATVOICE connection.

CHAPTER 7: REFERENCES

1) https://portal.icao.int -> NATTIG -> NATTIG Analysts Sub-Group

2) ICAO Annex 11, Air Traffic Services

3) ICAO Doc 9869, *Performance-based Communication and Surveillance (PBCS) Manual*

4) NAT Doc 011, *PBCS Monitoring and Reporting Guidance - North Atlantic Region*

CHAPTER 8: GLOSSARY

ACARS	Aircraft Communications Addressing and Reporting System
AGGW	ACARS Ground Gateway
AIRCOM	SITA data link message processor
ATC	Air Traffic Control
ACARS	Aircraft Communications Addressing and Reporting System
ADCC	Aviation Data Communication Corp
ADS-C	Automatic Dependent Surveillance – Contract
ARINC	A communication service provider, now named Collins
ATCO	Air Traffic Controller
ATS	Air Traffic Services
ATSP	Air Traffic Service Provider
AVICOM	Aviation Communications of Japan
Collins	A communication service provider.
CPDLC	Controller Pilot Data Link Communications
CSP	Communication Service Provider
DECEA	Department of Airspace Control (Brazil)
FANS	Future Air Navigation Systems
GES	Ground Earth Station
HF	High Frequency
ICAO	International Civil Aviation Organization
NAT	ICAO North Atlantic Region
NAT IMG	North Atlantic Implementation Management Group
NAT SPG	North Atlantic Systems Planning Group
NAT TIG	North Atlantic Technology and Interoperability Group
NORIA	Network Outage Reporting and Impact Assessment
PBCS	Performance Based Communication and Surveillance
RGS	Remote Ground Station
SAS	Satellite Access Station
SATVOICE	Satellite Voice Communications
SB-S	Swift Broadband Safety
SITA	A communication service provider.
VDL	VHF Data Link
VHF	Very High Frequency

— END —

Appendix C. Relevant Excerpts from the NAT TIG Summary of Discussions Related to CSP/SSP Outages and NODAR

Datalink outages

3.10 USA presented a paper that discussed the complexity and impacts of degradations and outages within the overall data link network, and underlined the need for increased efforts towards achieving the necessary levels of communication, coordination and performance.

3.11 It was recalled that since the completion of the tasks of the NODAR PT, very little progress was made towards achieving the notifications deemed necessary by the air traffic service providers (ATSPs) to support critical decision-making during data link outages and degradations caused by planned or unplanned maintenance and failures.

3.12 The Group reviewed the availability parameters detailed in ICAO Doc 9869 (PBCS Manual) for required communication performance (RCP) 240/ required surveillance performance (RSP) 180 and noted that, in some cases, they were not met in terms of number of observed outages and duration of unplanned outages. It was noted that the mentioned availability requirements were not included in the operators' contracts with the CSPs.

3.13 The Group noted an overview of data link outages presented by Iceland, UK and USA:

- Iceland: since NAT TIG/16: total of 566 minutes CPDLC issue.
- UK: between 16 October 2023 and 25 March 2024, 4 SITA events, 6 ARINC events and 4 NATS technical events and 3 events resulted by other sources.
- USA: between 1 January and 25 March 2024, the FAA has experienced 14 degradations or outages impacting data link services in New York (ZNY) oceanic airspace, as well as 30 affecting Oakland (ZOA), and 20 affecting Anchorage (ZAN).

3.14 The Group discussed the various impacts of the lost or degraded data link services resulting from outages. Of note was the increase in the number of outages that are impacting service delivery, specifically on the application of reduced separations. The Group was especially concerned about the anticipated traffic increases during the upcoming summer period should this trend in unplanned outages continue which in turn impacts airspace capacity. IATA and IFALPA mentioned the added pressure of the Summer Olympics in Paris which will place further demands on airlines for on time departures and arrivals.

3.15 The Group discussed possible ways of improving the process of coordination and notification of the outages and agreed that clear and structured communication between all parties is essential to support operational decision-making. In addition, due to the dependence upon this network, it is critical for the degraded or lost services to be re-established as quickly as possible.

3.16 Concerning regulatory aspects, it was recalled that the NAT SOG, in line with the NAT Vision item 4-4, established the NAT SOG Oversight of CSPs and SSPs Project Team (OCS PT), with the objective to determine if current oversight of CSPs and SSPs is sufficient for current and predicted future NAT operations. The OCS PT composition should include members of NAT SOG, NAT TIG, IATA, IFATCA and IFALPA. Therefore, NAT TIG members were encouraged to participate in the OCS PT.

3.17 As a result of the discussions, the Group invited ANSPs to form a team of the NAT TIG analysts in order to continue developing the process for determining outage impacts and measuring against the RCP240/RSP180 availability requirements.

Update on NODAR template implementation

3.30 The Group noted latest coordination made with the CSPs/SSPs on the implementation of NODAR template. It was noted that the Rapporteur organised teleconferences with the CSPs/SSPs and the ANSPs that provided updates to the NODAR template. The Group reiterated that the NODAR template and taxonomy is a long-term solution that Inmarsat, Iridium, SITA and Collins would gradually work towards aligning with it. The Group reviewed and endorsed the NODAR template and taxonomy, as provided at Appendix E, as the baseline for the NAT for network outage reporting and notification, pending NAT IMG approval. It was agreed that any future proposal for amendment to the template should be formally submitted to the NAT TIG for review. Therefore, the following was agreed:
Draft NAT IMG Decision 64/NATTIG17/x – NODAR template and taxonomy
That, the NODAR template and taxonomy at Appendix E is endorsed.

3.31 The Group noted that the table of ACARS path identifiers included in the NODAR template document (Appendix E) would need to be kept up to date, because it is the key that ANSPs use, in combination with the e-mail notification, to determine the impact of the planned maintenance or outage. The Group agreed that the NAT TIG should assume the responsibility for maintaining the table until a permanent solution is found.

3.32 The Group was further presented with a draft Network Outage Reporting and Impact Assessment (NORIA) Handbook for the NAT ANSPs. It was proposed that the NAT guidance handbook should be promoted to become a global document, possibly under the umbrella of the ICAO Operational Data Link Working Group (OPDLWG). In this regard, Bjarni Stefansson will write a working paper for the upcoming OPDLWG meeting in June with information on the NODAR status and seeking input on possible global applicability of the NODAR template and methodology.

3.33 The Group reviewed a draft Network Outage Reporting and Impact Assessment (NORIA) Handbook presented by the Rapporteur, as at Appendix F. The document will be under further review by the NAT TIG.

3.34 In addition, the Group agreed on the following tasks remained for the NAT TIG:

a) Monitor the progress of implementation by the CSPs and SSPs of the agreed template and common taxonomy.
b) Maintain the table of ACARS path identifiers. In this regard, the Group agreed to add a new item to the action item R-06 for the CSPs and SSPs: “Provide any amendments to the table of ACARS path/location identifiers”.
c) Continue developing the NORIA handbook and consider the best solution for developing it into a globally applicable document.
d) Identify whether any other documentation needs to be updated or developed because of the agreed template, taxonomy and table of ACARS path identifiers.

3.35 The Group noted that, with the approval of the notification template and taxonomy and ongoing development of the NORIA handbook, it was expected that the CSPs and SSPs would start working towards full implementation of the template.

3.36 It was noted that the NODAR template is not intended by the CSPs to be used for passing notifications to one another, and in fact there is currently no service level agreement between SITA and Collins to provide notifications to one another during outages. The Group expressed concerns about the risks associated with not receiving notifications about an outage affecting potentially half or more of the aircraft under the responsibility of the ATSP. It was remarked that the issue could be discussed in the new NAT SOG OCS PT.