



NAT OPS Bulletin Checklist		Issued: <b>25 February 2026</b>
Serial N°	Subject	Effective date
2025_001	NAT GNSS Interference Procedures	07 January 2025
2024_001	Performance Based Communications and Surveillance Tracks (PBCS Tracks)	12 June 2024
2023_001	NAT Oceanic Clearance Removal – <b>Revision 6</b>	25 February 2026
2020_002	Surveillance Service in the NAT / Flight Crew Operating Procedures – <b>Revision 1</b>	14 June 2022
2019_003	Data Link performance improvement options- <b>Revision 5</b>	12 June 2024
2018_003	Waypoint Insertion / Verification Special Emphasis Items – <b>Revision 1</b>	23 February 2021
2017_004	NAT Data Link Special Emphasis Items – <b>Revision 2</b>	14 June 2022
2017_002	Oceanic Errors - <b>Revision 9</b>	09 October 2025



# NAT OPS BULLETIN

Serial Number: 2025\_001  
Subject: NAT GNSS Interference Procedures  
Originator: NAT SPG

Issued: 7 January 2025  
Effective: 7 January 2025

The purpose of North Atlantic Operations Bulletin 2025-001 is to provide background information and guidance to aircraft operators in the North Atlantic (NAT) on the requirement to notify ATC of GNSS interference, and the Air Navigation Service Provider (ANSP) procedures that will be applied to aircraft that have been exposed to Global Navigation Satellite Systems (GNSS) interference (GNSS jamming and/or spoofing) during their flight.

***Any queries about the content of the attached document should be addressed to:***

ICAO EUR/NAT Office: [icaoournat@icao.int](mailto:icaoournat@icao.int)

## **NOTICE**

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

*The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR](http://www.icao.int/EURNAT/EUR) & NAT Documents, [NAT Documents](#), then [NAT Ops Bulletins](#).*

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

## 1. DEFINITIONS

The following are definitions as used in this bulletin:

- a) **GNSS Jamming** - An intentional Radio Frequency Interference (RFI) with GNSS signals. The interference prevents receivers from locking on to satellite signals and has the main effect of rendering the GNSS system ineffective or degraded for users in the jammed area.
- b) **GNSS Spoofing** - Involves broadcasting counterfeit satellite signals to deceive GNSS receivers, causing them to compute incorrect position, navigation, and timing (PNT) data.

## 2. PURPOSE OF BULLETIN

The purpose of this North Atlantic Operations (NAT OPS) Bulletin is to provide background information and guidance to aircraft operators in the North Atlantic (NAT) on the requirement to notify ATC of Global Navigation Satellite Systems (GNSS) interference (GNSS jamming and/or spoofing), and the Air Navigation Service Provider (ANSP) procedures that will be applied to aircraft that have been exposed to GNSS interference during their flight.

## 3. BACKGROUND

Aligned with reports in other Regions, since February 2022, the NAT has seen an increase in the frequency and severity of the impact caused by GNSS jamming and/or spoofing as well as an overall growth of intensity and sophistication of the events.

NAT ANSPs have been monitoring the effects of GNSS interference and have been working together to promote alignment and consistency in the procedures that are applied to aircraft entering the NAT Region that have been exposed to GNSS interference during their flight.

A non-exhaustive list of possible effects and impacts of GNSS jamming and/or spoofing are documented in various sources such as *EASA Safety Bulletin SIB No: 2022-02R3* (<https://ad.easa.europa.eu/ad/2022-02R3>). The following is a list of issues that are directly impacting NAT operations:

- Failure or degradation of aircraft systems which use GNSS as a time reference or source of position information, leading to;
  - loss of, or unreliable ADS-B data,
  - loss of, or unreliable ADS-C data, (for example time errors)
  - loss of Controller Pilot Data Link Communication (CPDLC).
- Inability to conduct or maintain GNSS based Area Navigation (RNAV) or Required Navigation Performance (RNP) operations.

*Note 1: Navigation specifications RNAV 10 (RNP 10) and RNP 4 are required for the application of performance-based separations.*

*Note 2: RNP 4 requires at least one functioning GNSS.*

*Note 3: RNAV 10 (RNP 10) is required to operate within the NAT HLA (between FL290 – FL410).*

Though the majority of GNSS jamming and/or spoofing activities take place outside the NAT Region, the inability of the aircraft to recover in-flight, leads to increased workload for both flight crews and air traffic controllers in the NAT.

The primary impact to the NAT is the ability to apply performance-based separations that rely on RNP 4/10, a working CPDLC connection, receipt of valid ADS-C data and reliable ADS-B surveillance data.

#### 4. OPERATOR & FLIGHT CREW PROCEDURES

##### Early Notification of GNSS interference:

Early notification of any failure or malfunction of GNSS, loss of RNP 4/10 capability, loss of CPDLC, loss of ADS-C, or loss of ADS-B enables improved ATC coordination and strategic planning of flights into the NAT utilizing non-performance-based separation minima, which could result in either no or minimal impact to the cleared profile, subject to the traffic scenario.

##### Late Notification of GNSS interference:

A late notification by flight crews, for example as the flight approaches the Oceanic Entry Point (OEP), or through automated ATC system alerts triggered by lack of usable ADS-B or ADS-C data, or failure to establish CPDLC connections, causes significant controller workload.

The result may be large profile changes being issued to the affected flight and in some cases to other flights to ensure the correct application of separation minima, to meet NAT requirements (e.g. HLA) or to meet coordination requirements by adjacent ANSPs.

Flight crews that experience or suspect GNSS interference enroute to the NAT Region shall notify the initial NAT ANSP in the RCL. Flights not submitting an RCL message (via New York East) shall notify New York via voice.

Notification should be included in the RCL message via ACARS or voice, confirming degradation of navigation status and detail of ongoing loss/impacts to the aircraft systems and capabilities.

Examples:

- ‘ATC REMARKS/ GNSS INTERFERENCE RNP10 ONLY’
- ‘ATC REMARKS/ NO DATA LINK’
- ‘ATC REMARKS/ DEGRADED NAVIGATION NO GNSS’

In addition, operators can also make the ANSP aware when one of their flights has been impacted by GNSS interference through direct contact.

#### 5. NAT ANSP PROCEDURES

Upon notification or detection of a flight that has been impacted by GNSS interference, NAT ANSPs will update flight details within their Flight Data Processors (FDP) and coordinate the flight profile with adjacent ANSPs to confirm NAT HLA status, and eligibility for application of performance-based separation minima.

The ANSP procedures are:

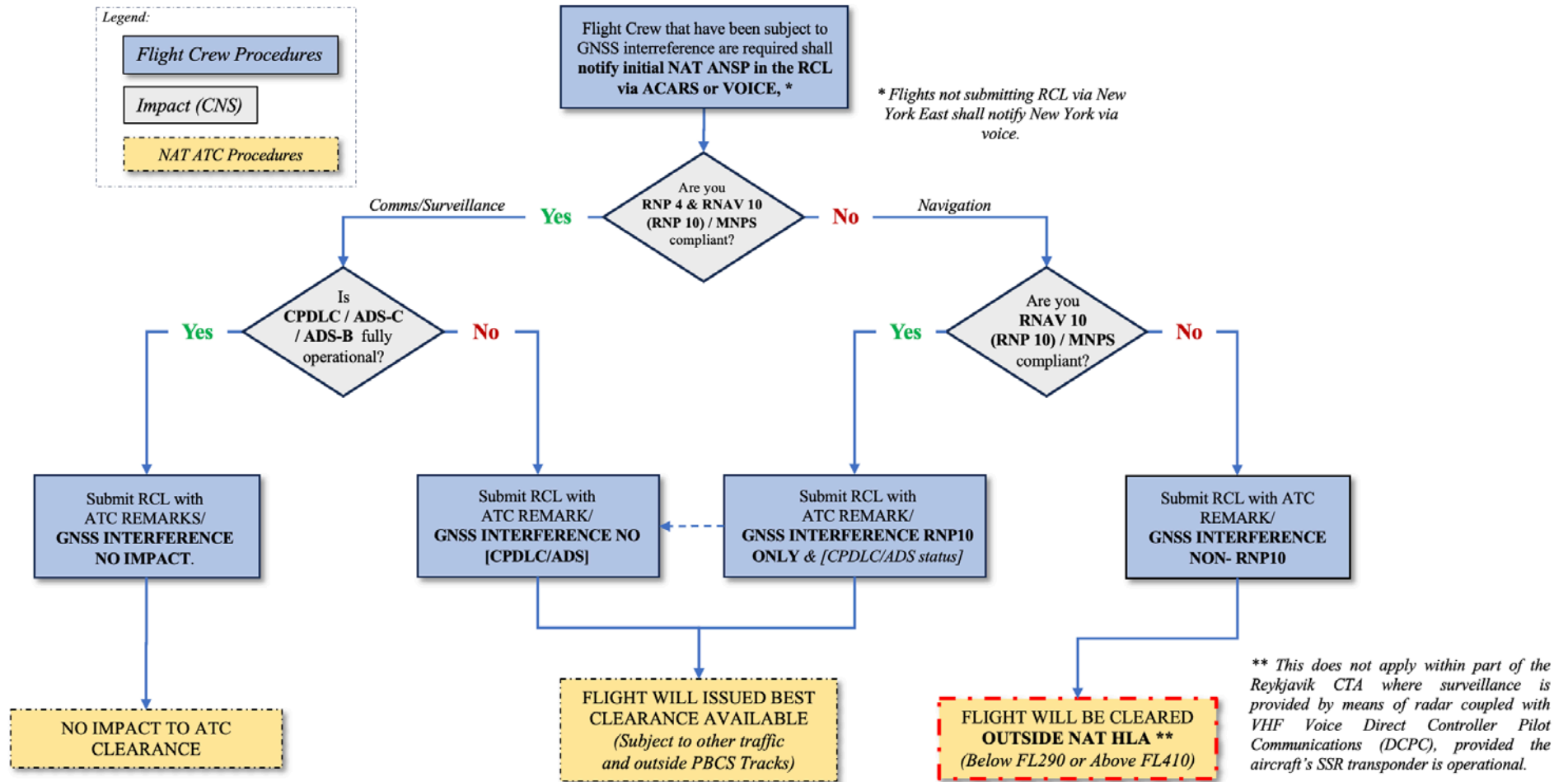
- Flights that do not meet at least RNAV 10 (RNP 10) navigation capability will be cleared outside the NAT HLA (below FL290 or above FL410). This does not apply within part of the Reykjavik CTA or Santa Maria OCA where surveillance is provided by means of radar and/or Wide Area Multilateration (WAM) coupled with VHF Voice Direct Controller Pilot Communications (DCPC), provided the aircraft’s SSR transponder is operational.
- Aircraft losing RNP 4 enroute but retaining RNAV 10 (RNP 10) capability will be cleared on the most suitable profile within the NAT HLA subject to impact on other traffic and outside of PBCS tracks.
- Aircraft experiencing a CPDLC and/or ADS-C failure enroute will be cleared on the most suitable profile within the NAT Data Link Mandate airspace (FL290 – FL410) subject to impact on other traffic.
- Aircraft experiencing an ADS-B failure enroute will be cleared on the most suitable profile within the NAT HLA subject to impact on other traffic.

**6. WEBSITES**

The ICAO EUR/NAT Office Website is at: [www.icao.int/eurat](http://www.icao.int/eurat). Click on **EUR & NAT Documents** >> **NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project planning documents.

---

### NAT GNSS Interference Procedures



- END -



# NAT OPS BULLETIN

Serial Number: 2024\_001

Issued: 12 June 2024

Subject: **Performance Based Communications & Surveillance Tracks (PBCS Tracks)**

Effective: 12 June 2024

Originator: **NAT POG**

The purpose of this North Atlantic Operations Bulletin (NAT OPS) is to provide guidance to North Atlantic (NAT) operators on material to be included in pilot and dispatcher training programs and operations relation to the publication of 'PBCS Tracks'.

***Any queries about the content of the attached document should be addressed to:***

***ICAO EUR/NAT Office: [icaournat@icao.int](mailto:icaournat@icao.int)***

## **NOTICE**

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

***The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR](http://www.icao.int/EURNAT/EUR) & NAT Documents, NAT Documents, then NAT Ops Bulletins.***

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

## NAT OPERATIONS BULLETIN – PERFORMANCE BASED COMMUNICATIONS & SURVEILLANCE TRACKS (PBCS TRACKS)

**1.1 Purpose of Bulletin** –The purpose of this bulletin is to provide guidance to North Atlantic (NAT) operators on material to be included in pilot and dispatcher training programs and operations manuals in relation to the publication of ‘*PBCS Tracks*’.

**1.2** Any necessary updates will be distributed through industry organizations and posted on the ICAO EUR/NAT Website.

**1.3** The following is an explanation of the terms “should”, “must” and “shall” as used in this bulletin.

- a) “Should” is used to indicate a recommended practice or policy that is considered as desirable for the safety of operations.
- b) “Shall” and “must” are used to indicate a practice or policy that is considered necessary for the safety of operations.

**2. Overview - Performance Based Communications & Surveillance Tracks (*PBCS Tracks*).** Organised Track System (OTS) tracks are designed with a minimum of 42.6km (23 NM) lateral spacing through whole and half degrees of latitude between NAT OTS tracks, between flight level (FL) 340 – 400 (inclusive), except when the OTS occurs in the New York OCA.

**2.1** OTS tracks spaced using 42.6km (23 NM) lateral separation minima (spacing of half degree of latitude) at any point will be designated as ‘*PBCS tracks*’ and will be uniquely identified in Remark 3 of the Track Message. See Section 4 (Flight Planning Provisions).

**2.2** A ‘*PBCS Track*’ can either be:

- a) A whole degree of latitude ‘*PBCS track*’ (e.g., all waypoints are anchored on whole degrees of latitude; 55 degrees NORTH latitude 20 degrees WEST longitude), or
- b) A half degree latitude ‘*PBCS track*’ (e.g., all waypoints are anchored on half degrees of latitude; 54 degrees-30 minutes NORTH latitude 20 degrees WEST longitude), or
- c) A combination of whole and half degrees of latitude ‘*PBCS track*’ (e.g., waypoints can be anchored on either whole or half degrees of latitude.).

**3. Operator/Aircraft Eligibility.** Operators should consult with the State authority responsible for their operation to obtain appropriate PBCS and PBN authorisations in order to be eligible for the performance-based separation minima and access to ‘*PBCS Tracks*’.

**3.1** Eligibility for the provision of performance-based minima and access to ‘*PBCS Tracks*’ is based on the following:

**3.2** Operators are eligible to flight plan to operate on published ‘*PBCS Tracks*’ provided the flights are:

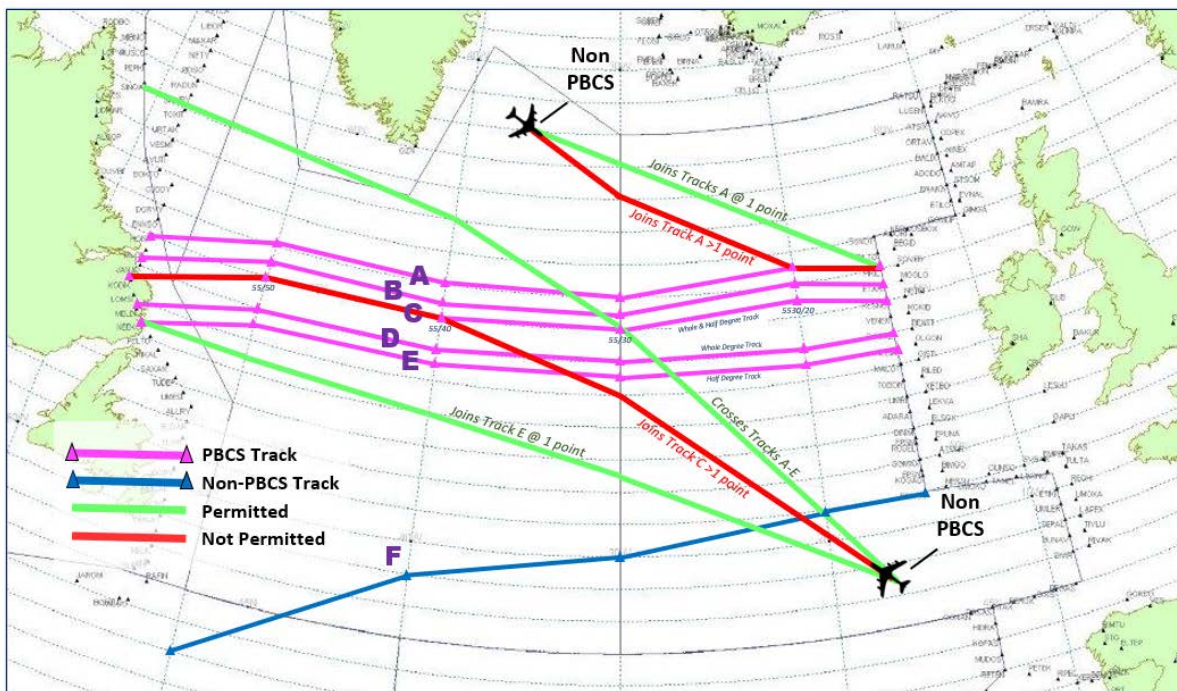
- a) Authorised for Required Navigation Performance 4 (RNP 4);
- b) Fitted with and operating FANS 1/A CPDLC and ADS-C; and
- c) Authorized for RCP 240 and RSP 180.

*Performance Based Communications & Surveillance Tracks (PBCS Tracks)*

**3.3** Operators / aircraft not eligible to operate on published ‘PBCS Tracks’ may be permitted to:

- Infringe ‘PBCS Tracks’ at FL340 – FL400 (inclusive) at only one point (including Oceanic Entry / Exit Point) i.e., cross but not join an OTS PBCS track, and;
- Climb or descend through levels FL340 – FL400 on a ‘PBCS Track’ provided the climb or descent is continuous.

*Note: such clearances will only be permitted on a tactical basis.*



**4. Flight Planning Provisions**

**4.1** Operators must file the correct ICAO Flight Plan annotations in Items 10 and 18 to indicate that required equipment and authorizations are available for the flight.

- Item 10a (Radio communication, navigation and approach aid equipment and capabilities)
  - Insert “J5” to indicate FANS 1/A Inmarsat CPDLC SATCOM and/or “J7” to indicate FANS 1/A CPDLC Iridium SATCOM data link equipment and operation;
  - Insert “P2” to indicate RCP 240 authorisation;
  - Insert “R” to indicate that aircraft navigation system equipment and operation meet Performance Based Navigation (PBN) levels specified in Item 18. See 4.1 c) below on the related Item 18 entry for RNP 4.
- Item 10b (Surveillance equipment and capabilities)
  - Insert “D1” to indicate FANS 1/A ADS-C equipment and operation.
- Item 18 (Other information)
  - Insert the characters “PBN/” followed by “L1” to indicate RNP 4 authorization.
  - Insert the characters “SUR/” followed by “RSP180” with no spaces to indicate RSP 180 authorisation.

**4.2** Only those operators/aircraft eligible to flight plan to operate on ‘PBCS Tracks’ as described in 2.2 above, are allowed to operate on ‘PBCS Tracks’ between FL340 – FL400 (inclusive). All ‘PBCS tracks’ and flight levels are uniquely identified in “Remark 3” of the OTS Track Message as shown below:

**Westbound NAT Track Message Example: PBCS Tracks**

*Note:* See “Remark 3”. Tracks A, B, C, D and E are designated as PBCS tracks between FL340-FL400.

ZCZC OLG068 2020190FF EGZZOWXX EGZZOXXX  
 082009 202019 EGGXZOZX (NAT-1/3 TRACKS FLS  
 340/390 INCLUSIVE  
 APR 09/1130Z TO APR09 1900Z  
 PART ONE OF THREE PARTS-  
 A PIKIL 5630/20 56/30 56/40 56/50 JANJO  
 EAST LVLS NIL  
 WEST LVLS 340 350 360 370 380 390  
 EUR RTS WEST NIL  
 NAR NIL-  
 B ETARI 56/20 5530/30 5530/40 5530/50 KOKID  
 EAST LVLS NIL  
 WEST LVLS 340 350 360 370 380 390  
 EUR RTS WEST NIL  
 NAR NIL-  
 C RESNO 5530/20 55/30 55/40 55/50 LOMSI  
 EAST LVLS NIL  
 WEST LVLS 340 350 360 370 380 390  
 EUR RTS WEST NIL  
 NAR NIL-  
 END OF PART ONE OF THREE PARTS)  
 FF CYZZWNAT  
 ZCZC OLG068 2020190FF EGZZOWXX EGZZOXXX  
 082009 202019 EGGXZOZX  
 (NAT-2/3 TRACKS FLS 340/390 INCLUSIVE  
 APR 09/1130Z TO APR 09/1900Z  
 PART TWO OF THREE PARTS-  
 D DOGAL 5430/20 5430/30 5430/40 5430/50 MELDI  
 EAST LVLS NIL  
 WEST LVLS 340 350 360 370 380 390  
 EUR RTS WEST NIL  
 NAR NIL-  
 E NEBIN 54/20 54/30 54/40 54/50 NEEKO

EAST LVLS NIL  
 WEST LVLS 340 350 360 370 380 390  
 EUR RTS WEST NIL  
 NAR NIL  
 F BEDRA 49/20 48/30 47/40 43/50 SOORY  
 EAST LVLS NIL  
 WEST LVLS 340 350 360 370 380 390  
 EUR RTS WEST NIL  
 NAR NIL  
 END OF PART TWO OF THREE PARTS)  
 FF CYZZWNAT  
 ZCZC OLG068 2020190FF EGZZOWXX EGZZOXXX  
 082009 202019 EGGXZOZX  
 (NAT-3/3 TRACKS FLS 340/390 INCLUSIVE  
 APR 09/1130Z TO APR 09/1900Z  
 PART THREE OF THREE PARTS-  
 REMARKS:  
 1. TMI IS 100 AND OPERATORS ARE REMINDED TO  
 INCLUDE THE  
 TMI NUMBER AS PART OF THE OCEANIC CLEARANCE  
 READ BACK.  
 2. OPERATORS ARE REMINDED THAT ADS-C AND CPDLC  
 IS MANDATED IN NAT AIRSPACE FL290 TO FL410.  
 3. PBCS OTS LEVELS 340-400. PBCS TRACKS AS  
 FOLLOWS  
 TRACK A  
 TRACK B  
 TRACK C  
 TRACK D  
 TRACK E  
 END OF PBCS OTS...

## 5. Websites

**5.1** The ICAO EUR/NAT Office Website is at: [www.icao.int/eurnat](http://www.icao.int/eurnat). Click on **EUR & NAT Documents** >> **NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project planning documents.

## 6. Contacts

**6.1** Any queries about the content of this bulletin should be addressed to ICAO EUR/NAT Office:

[icaoeurnat@icao.int](mailto:icaoeurnat@icao.int).

— END —



# NAT OPS BULLETIN

Serial Number: 2023\_001 Revision 6

Subject: NAT Oceanic Clearance Removal

Originator: NAT SPG

Issued: 25 February 2026

Effective: 25 February 2026

## NOTICE

**The Oceanic Clearance Removal (OCR) commenced in the NAT in 2024 except for Shanwick.**

**Expect NOTAM publication prior to implementation for Shanwick.**

The purpose of North Atlantic Operations Bulletin 2023-001 is to provide background information and guidance material to support the removal of oceanic clearances in the NAT in order to align NAT procedures with global procedures as far as possible. Other relevant NAT Documentation, State AIPs and operator and flight crew education material should be updated accordingly to facilitate the changes.

Any necessary changes to aircraft's current flight plan before the Oceanic Entry Point will be addressed by specific ATC clearances as required.

### Note:

Due to delayed OCR implementation by Shanwick Oceanic, Oceanic Clearances will continue to be issued by **SHANWICK OCEANIC only**, following submission of an RCL until further notice.

*Any queries about the content of the attached document should be addressed to: ICAO EUR/NAT Office:*

[icaoeurnat@icao.int](mailto:icaoeurnat@icao.int)

## NOTICE

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

*The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR](http://www.icao.int/EURNAT/EUR) & NAT Documents, [NAT Documents](#), then [NAT Ops Bulletins](#).*

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

**ABBREVIATIONS, ACRONYMS AND DEFINITIONS**

The following are abbreviations, acronyms and definitions as used in this bulletin:

- a) **Automatic Dependent Surveillance Broadcast (ADS-B)** A means by which aircraft, can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via data link.
- b) **Automatic Dependent Surveillance Contract (ADS-C)** A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports
- c) **Aircraft Communications Addressing and Reporting System (ACARS)** A digital datalink system for transmission of short messages between aircraft and ground stations.
- d) **Air Navigation Service Provider (ANSP)** A public or a private legal entity providing Air Navigation Services. NAV CANADA (Gander), Isavia ANS (Reykjavik), Avinor (Bodo), NATS U.K. (Shanwick), NavPortugal (Santa Maria) and FAA (New York Oceanic).
- e) **Cost Index (ECON)** Operators can flight plan cost index (ECON) provided that the planned true Mach number for any portion of the flight within the NAT is specified in item 15 of the ICAO FPL. Flight crews can fly FMS cost index (ECON). ATC will assign a fixed Mach number if required due to traffic.
- f) **Estimated Time Over Significant Point (ETO)** – A time used in the RCL as an estimate at the OEP.
- g) **Flight Level (FL)**
- i) **North Atlantic Region - (NAT Region)**
  - New York Oceanic East OCA / KZWY
  - Gander OCA / CZQX
  - Reykjavik OCA / BIRD
  - Bodø OCA (above FL195) / ENOB
  - Shanwick OCA / EGGX
  - Santa Maria OCA / LPPO
- j) **Oceanic Control Area (OCA)** Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas.
- k) **Oceanic Entry Point (OEP)** The Oceanic Entry point is generally a “named” waypoint, on or close to the FIR boundary where the aircraft enters an oceanic control area.
  - a. Routes involving more than one OCA may result in multiple Oceanic Entry and Exit Points.
  - b. For aircraft entering Reykjavik from Edmonton, at or north of 82N, the Oceanic Entry Point can be an “unnamed” waypoint (Lat/Long position) on the boundary.
- l) **Oceanic Exit Point (OXP)** The Oceanic Exit point is generally a “named” waypoint, on or close to the FIR boundary where the aircraft leaves the last oceanic control area.
- m) **RCL** A Voice, or Data Link message via ACARS, used to provide ETO at OEP, requested Flight Level, and Mach. (The RCL, or “RCL RECEIVED”, is not a clearance.)

## 1. INTRODUCTION

- 1.1 The NAT Region introduced the Oceanic Clearance procedure to enable safe and efficient handling of the large volume of traffic that operated within the NAT procedural oceanic airspace utilizing HF voice communications and large separation standards.
- 1.2 Recently, significant technological advancements in Communication, Navigation and Surveillance have enabled NAT ANSPs to improve safety and services in the NAT Region and further reduce separation minima. These technologies include:
- Communication – utilization of CPDLC, including route conformance check using the uplink message **CONFIRM ASSIGNED ROUTE**;
  - Surveillance – utilization of ADS-C and ADS-B, including route conformance check using the ADS-C capability to report the NEXT and NEXT+1 waypoint;
  - Improved computer interfaces between Domestic and Oceanic air traffic control sectors.
- 1.3 The NAT Systems Planning Group (NAT SPG) concluded that technological developments had reached a point where the oceanic clearance was no longer required.
- 1.4 The following is an explanation of the terms “should”, “must” and “shall” as used in this bulletin.
- “Should” is used to indicate a recommended practice or policy that is considered as desirable for the safety of operations.
  - “Shall” and “must” are used to indicate a practice or policy that is considered as necessary for the safety of operations.
- 1.5 This NAT Ops Bulletin describes amended procedures that are applicable after the removal of NAT oceanic clearances.

## 2. FLIGHT CREW PROCEDURES

### RCL

Send RCL message only to Bodo, Gander, Santa Maria and Shanwick.

RCL is **not** required for New York OCA East and Reykjavik.

*Note: For Reykjavik, if an RCL is sent, the flight crew will be notified that RCL is not required by BIRD.*

2.1 The ACARS or voice RCL must contain all of the following information:

- Oceanic Entry Point (OEP)
- ETO for the OEP
- Mach Number (based on FMS cost index (ECON))
- Requested Flight Level
- The highest acceptable Flight Level which can be attained at the OEP (via free text)
  - o provide the highest acceptable Flight Level as MAX FL
    - Example: Requesting FL360 - enter free text MAX FL380
  - o If requested Flight Level is the highest acceptable; provide the requested Flight Level as MAX FL
    - Example: Requesting FL360 - enter free text MAX FL360

2.2 For the OCAs listed below, flight crews must send the ACARS RCL message prior to the OEP as follows;

- Gander 90-60 minutes
- Shanwick 90-30 minutes
- Santa Maria at least 40 minutes
- Bodo at least 20 minutes

**Note: The RCL, or “RCL RECEIVED”, is not a clearance.**

2.3 Voice shall be used to submit an RCL message if;

- Not ACARS ARINC 623 Data Link equipped
- ACARS Data Link is not operational
- **RCL REJECTED** is received by aircraft
- No response to RCL is received within 15 minutes of sending RCL

2.4 The following response message to the RCL will be generated automatically and delivered to the aircraft via ACARS or voice as appropriate:

**RCL RECEIVED BY [ANSP].**

Revert to voice if **RCL REJECTED** is received.

*Note: There will be no clearance sent via the traditional ACARS method.*

*Note: If ATC cannot accept the requested OEP Flight Level, the closest oceanic Flight Level to the one requested (RCL) will be determined and a clearance to climb or descend issued prior to the OEP. The “MAX FL” will never be violated.*

*Note: Flight crews are reminded that a change in Flight Level, Speed or Route can be requested at any time after the OEP.*

2.5 The information in the RCL message will be processed as follows:

RCL data item	ATC Processing
Oceanic Entry Point (OEP) and ETO time	Information is used to update the currently held ATC data.
Mach Number	ATC will use the requested Mach speed information as the reference speed for cost index (ECON) operations. The aircraft should continue to operate on FMS cost index (ECON) unless it is assigned a fixed Mach speed by ATC. ATC must be advised if the speed changes by Mach 0.02 or more from the Mach in the RCL.
Flight Level	ATC will store the requested Flight Level information. The aircraft shall not change Flight Level unless it is cleared for a Flight Level change by ATC. Flight crews are reminded that a change in Flight Level can be requested at any time after the OEP as the traffic situation constantly changes and previously blocked Flight Levels may become available.
Max Flight Level	Max Flight Level shall be provided in the RCL. ATC will store the Max Flight Level Information for traffic planning purposes. If no Max Flight Level is provided, the RCL requested Flight Level will be considered as the highest acceptable Flight Level at OEP.
Other information	Information is brought to the attention of the controller.

#### Oceanic Route Change Communications (Prior to OEP)

2.6 Upon receipt of the ACARS Data Link RCL, any route amendment will be issued either by voice or CPDLC loadable route clearance uplink.

#### *Shanwick*

2.7 The Shanwick oceanic controller will only issue the ACARS message **CONTACT SHANWICK BY VOICE** instructing the flight crew to contact Shanwick oceanic ATC (123.950/127.650) when:

- An oceanic route amendment is necessary due to traffic;
- Shanwick ATC considers it appropriate to do so, to ensure the most efficient oceanic route and Flight Level.

*Note: Instruction to contact by voice will be no later than 30 minutes prior to the OEP.*

#### Route Conformance Checking (After passing OEP)

2.8 **CONFIRM ASSIGNED ROUTE** will be uplinked to FANS equipped aircraft after crossing the OEP. CPDLC loadable route clearance uplinks will be used to amend the route where necessary after the OEP.

#### Entry Conditions

##### Route

2.9 The aircraft shall **not** change route unless it is cleared for a route change by ATC. No oceanic clearance is required.

##### Speed

2.10 Fly cost index FMS (ECON). ATC will assign a fixed Mach number if required due to traffic.

2.11 If ATC assigns a fixed Mach number for the oceanic crossing due to traffic, request **NORMAL SPEED** (via CPDLC or voice) after the OXP in domestic ATC airspace.

Flight level

2.12 The aircraft shall **not** change Flight Level unless it is cleared for a Flight Level change by ATC.

**3. AIR-GROUND COMMUNICATIONS FAILURE**

3.1 The NAT loss of communication procedure has been amended as follows:

**Communications failure while operating in the NAT Region:**

- The flight crew shall maintain the current flight plan until reaching the OXP.
- No route, flight level or speed change shall be made before the OXP unless a change is deemed necessary by the pilot in command to ensure the safety of the aircraft.
- Aircraft with a destination within the NAT Region should follow the procedures above until reaching the top of decent point and should thereafter follow procedures published in the applicable State AIP.

**4. WEBSITES**

The ICAO EUR/NAT Office Website is at: [www.icao.int/eurnat](http://www.icao.int/eurnat). Click on **EUR & NAT Documents** >> **NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project planning documents.

---

**ATTACHMENT A – SUMMARY OF NAT OCEANIC CLEARANCE REMOVAL  
SPECIAL EMPHASIS ITEMS CONTAINED IN THIS NAT OPS BULLETIN**

**SPECIAL EMPHASIS ITEMS FOR NAT OCEANIC CLEARANCE REMOVAL. The Special Emphasis Items (SEI) listed below should be part of the flight crew education required to ensure a thorough understanding of the removal of the NAT oceanic clearance policies and procedures especially in regard to Route and Flight Level assignment.**

**Flight Crew**

- The RCL gives ATC your OEP ETO, requested Flight Level, Mach, along with your MAX FL (highest acceptable). ATC will never violate your MAX FL. If no Max Flight Level is provided, the RCL requested Flight Level will be considered as the highest acceptable Flight Level at OEP.

Send RCL only to Bodo, Gander, Santa Maria and Shanwick. *Note: For Reykjavik, if an RCL is sent, the flight crew will be notified that RCL is not required by BIRD.*

- ATC response will be **RCL RECEIVED BY [ANSP]**.

**Note: The RCL, or “RCL RECEIVED”, is not a clearance.**

- Revert to voice if **RCL REJECTED** is received.

*Note: There will be no clearance sent via the traditional ACARS method.*

*Note: Flight crews are reminded that a change in Flight Level, Speed or Route can be requested at any time after the OEP.*

- The flight crew shall **not** change route unless it is cleared for a route change by ATC. No oceanic clearance is required. Any necessary route change (prior to OEP) will be either uplinked via a loadable CPDLC message or by voice.
- OEP Flight Level
  - If ATC cannot accept your requested OEP Flight Level, they will determine the closest Flight Level to the one requested (RCL) and issue a clearance to climb or descend prior to the OEP. The “MAX FL” will never be violated.
  - The RCL Flight Level is stored by ATC for issuance when traffic permits, flight crew can request any Flight Level changes they desire after the OEP with the expectation that Flight Level changes in the NAT can be routinely accommodated.
  - **The aircraft shall not change Flight Level unless it is cleared for a Flight Level change by ATC.**
- Speed
  - Fly FMS cost index (ECON). ATC will assign a fixed Mach number if required due to traffic.
  - If ATC assigns a fixed MACH number for the oceanic crossing due to traffic, request NORMAL SPEED (via CPDLC or voice) after OXP in domestic ATC airspace.

– END –



# NAT OPS BULLETIN

Serial Number: 2020\_002\_Rev 01

Issued: 14Jun2022

Subject: **Surveillance Service in the NAT Region /  
Flight Crew Operating Procedures**

Effective: 14Jun2022

Originator: NAT SPG

The purpose of North Atlantic Operations Bulletin 2020-002 is to provide NAT Region operators and flight crews material to be included in pilot training programs and operations manuals in preparation for operations in the North Atlantic following implementation of expanded ATS Surveillance with Space Based ADS-B.

*Any queries about the content of the attached document should be addressed to:*

*ICAO EUR/NAT Office: [icaoearnat@icao.int](mailto:icaoearnat@icao.int)*

*or one of the following below:*

*UK NATS - [colin.houston@nats.co.uk](mailto:colin.houston@nats.co.uk)*

*NAV CANADA – [atlupoqx@navcanada.ca](mailto:atlupoqx@navcanada.ca)*

*ISAVIA - [procedures@isavia.is](mailto:procedures@isavia.is)*

*NAV PORTUGAL - [Jose.Cabral@nav.pt](mailto:Jose.Cabral@nav.pt)*

## **NOTICE**

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

*The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR](http://www.icao.int/EURNAT/EUR) & NAT Documents, NAT Documents, then NAT Ops Bulletins.*

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

---

**NAT OPERATIONS BULLETIN – SURVEILLANCE SERVICE IN THE NAT REGION / FLIGHT CREW OPERATING PROCEDURES****1. Introduction**

- 1.1. The purpose of this North Atlantic Operations (NAT OPS) Bulletin is to provide NAT Region operators and flight crew material to be included in pilot training programs and operations manuals in preparation for operations in the North Atlantic following implementation of expanded ATS Surveillance with Space Based ADS-B.

**2. General**

- 2.1. Prior to entering the NAT Region from adjacent continental FIRs, most flights are provided air traffic control service by domestic Air Navigation Service Providers (ANSPs) using radar and/or ADS-B combined with direct controller to pilot VHF Voice communications.
- 2.2. These flights are, in many cases, advised that “radar service is terminated”, or “surveillance service is terminated” upon transfer to the appropriate oceanic control centre. Prior to ADS-B enabled Air Traffic Service (ATS) surveillance service being available in Gander, Reykjavik, Shanwick and Santa Maria, pilots often used this phraseology as a reminder to adopt NAT Region flight crew procedures required for non- surveillance “procedural” airspace, or airspace where ATS surveillance services are not provided.
- 2.3. ATS surveillance services have now become more widely available in the NAT Region. The transition of aircraft (operating ADS-B and SSR equipment) across adjoining areas of radar and/or ADS-B systems coverage will not normally constitute an interruption in identification, and therefore the existing practice of announcing ‘surveillance/radar services terminated’ to most flights entering the NAT Region may no longer occur.
- 2.4. Furthermore, the termination of an ATS surveillance service by any individual ANSP no longer implies that the identification of the aircraft to the ATC system is also terminated.

**3. Flight Crew Procedures**

- 3.1. Operator and flight crew procedures for flights operating in the NAT Region can be found in ICAO Annex 2, ICAO Doc 8168, ICAO Doc 4444, ICAO Doc 7030, NAT Doc 007, NAT OPS Bulletins, and State AIPs.
- 3.2. Operators are reminded to evaluate their own flight crew procedures and practices to ensure they include those identified in NAT OPS Bulletin 2017\_005 - *Sample Oceanic Checklist*.
- 3.3. **Regardless of whether or not ATC issues a termination of “surveillance/radar service”, when direct controller to pilot VHF Voice communication for the provision or air traffic control is no longer used, existing flight crew procedures continue to be required and remain unchanged while operating in the NAT region oceanic airspace.**

**4. Websites**

- 4.1. The ICAO EUR/NAT Office Website is at: [www.icao.int/eurnat](http://www.icao.int/eurnat). Click on **EUR & NAT Documents** >> **NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project documents.

**5. Contacts**

5.1. The following are the contacts for information or to provide feedback on this operations bulletin:

- UK NATS - colin.houston@nats.co.uk
  - NAV CANADA – atlupoqx@navcanada.ca
  - ISAVIA - procedures@isavia.is
  - NAV PORTUGAL - Jose.Cabral@nav.pt
-



# NAT OPS BULLETIN

Serial Number: **2019\_003 Rev 5**

Subject: **Data Link Performance Improvement Options**

Originator: **NAT SPG**

Issued: **12 June 2024**

Effective: **12 June 2024**

The purpose of this North Atlantic Operations Bulletin (NAT OPS) is to provide guidance to North Atlantic (NAT) operators regarding options that are available to improve data link performance.

***Any queries about the content of the attached document should be addressed to:***

***ICAO EUR/NAT Office: [icaoearnat@icao.int](mailto:icaoearnat@icao.int)***

## **NOTICE**

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

***The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR/NAT Documents](http://www.icao.int/EURNAT/EUR/NAT Documents), NAT Documents, then NAT Ops Bulletins.***

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

---

**NAT OPERATIONS BULLETIN – DATA LINK PERFORMANCE IMPROVEMENT OPTIONS**

**1. Purpose of Bulletin.** The purpose of this bulletin is to provide guidance to North Atlantic (NAT) operators regarding options that are available to improve data link performance.

**2. Background.** Application of the reduced lateral and longitudinal separation minima in the NAT Region is dependent on a smooth functioning FANS 1/A data link system. Various known data link related deficiencies in aircraft systems and poor data link performance have a detrimental effect on the air traffic control system and impede aircraft operator's efforts to obtain performance-based communication and surveillance (PBCS) authorizations. Many of these known deficiencies have already been fixed by aircraft manufacturers and software upgrades are available. To ensure the best possible functioning of the NAT air traffic control system, it is of utmost importance that aircraft operators always operate the latest available FANS 1/A related software version in aircraft that fly in the NAT high level airspace (HLA) and that the aircraft systems are configured in an optimal manner. Meanwhile, implementation of improvements and corrections is also a priority undertaking for the ground and network segments of the overall FANS 1/A system.

**3.** The list of recommended data link performance improvement options provided in the **Attachment** to this OPS Bulletin describes the problems and solutions identified to improve data link performance. However, it should be noted that not all aircraft operators experience all these problems and therefore not all solutions apply to all aircraft operators. Additionally, while acknowledging there is confidence that the recommended improvement options would improve the data link performance, it should be noted that these updates might not be necessarily seen as sufficient to ensure a PBCS authorization. Aircraft operators are advised to consult with aircraft manufacturers for guidance regarding implementation of the improvement options.

**4.** The certification status versus EUROCAE ED-122 / RTCA DO-306 standards and PBCS authorization requirements should be clarified by aircraft operators in coordination with the manufacturers concerned, recognizing the aircraft operators need to consider the economic and operational aspects and priorities.

**5. Websites**

**5.1** The ICAO EUR/NAT Office Website is at: [www.icao.int/eurnat](http://www.icao.int/eurnat). Click on **EUR & NAT Documents >> NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project planning documents.

**6. Contacts**

**6.1** Any queries about the content of this bulletin should be addressed to ICAO EUR/NAT Office:

**icaoeurnat@icao.int.**

---

**ATTACHMENT - LIST OF DATA LINK PERFORMANCE IMPROVEMENT OPTIONS**

PROBLEM / ISSUE	SOLUTIONS / ACTIONS
<p><b>1. HF datalink – next-on-busy</b></p> <p>1.1 Airbus ATSU and Rockwell Collins CMU-900 avionics may contain a feature called “next-on-busy” by which those avionics send a new downlink message via HF datalink when outside of VHF coverage and SATCOM is busy sending a previous downlink, instead of waiting for SATCOM to finish sending the previous downlink and then sending the new downlink via SATCOM. This feature reduces datalink performance because the avionics can actually deliver the new downlink more quickly if they wait for SATCOM to finish sending the previous downlink and then send the new downlink via SATCOM. On airframes equipped with Rockwell Collins CMU-900, this problem is compounded by subsequent downlink messages being queued while the avionics wait for acknowledgement of the HF datalink downlink message.</p>	<p><i>Solution a): For CMU-900 installations with Iridium SATCOM where PBCS is showing poor performance, place the HF in “voice-only”. This option removes HF DL as an available media so the “next-on-busy” function will not occur.</i></p> <p>At the recent FAA PARC CWG40, an Iridium SATCOM equipped operator demonstrated the PBCS performance impact of HF DL “next-on-busy”. Some other operators have also taken this action to place HF into “voice-only” mode. Iridium SATCOM operators, equipped with CMU-900, could take this action on interim basis prior to an available CMU software. See item 4 below on HF DL for similar recommendation.</p> <hr/> <p><i>Solution b): Work with Airbus and Rockwell Collins to install software versions that disable the next-on-busy feature. (For the Rockwell Collins CMU-900 with recent software, this can be done with a database update).</i></p>
<p><b>2. VHF to SATCOM Transitions</b></p> <p>2.1 Transitions from using VHF to using SATCOM, especially when they occur repeatedly in a short period of time, reduce datalink performance because the ACARS protocols are generally not designed to maximize performance but rather to minimize cost by persistently attempting to use less costly VHF.</p>	<p><i>Solution a): Disable VHF datalink just prior to entering oceanic airspace</i></p> <p>Implement flight crew procedures to disable VHF datalink (usually by placing the VHF radio used for VHF datalink into voice mode) just prior to entering oceanic airspace or prior to leaving contiguous VHF coverage in order to proactively force SATCOM use. Conversely, enable VHF datalink when exiting oceanic airspace or entering contiguous VHF coverage.</p> <p><i>Caution: In the event of an oceanic diversion, when SATCOM and HF data link (if installed) are lost or otherwise unavailable, flight crews will need to re-enable VHF data link to provide ACARS AOC communication with company.</i></p> <hr/> <p><i>Solution b): Implement more precise VHF region definitions</i></p> <p>In avionics that offer the capability to prefer specified subnetworks in defined geographic regions (including 777 DCMF and 787 CMF), implement more precise VHF region definitions that exclude areas of the world with only intermittent VHF subnetwork coverage in order to force SATCOM use in those areas. Such areas, in which the DLMA has observed consistent performance problems, include the North Pacific near the Aleutian Islands and the Kamchatka Peninsula, the South Pacific near New</p>

PROBLEM / ISSUE	SOLUTIONS / ACTIONS
	<p>Caledonia and Vanuatu, and the North Atlantic near Bermuda and the Azores.</p> <p><i>Caution: In the event of an oceanic diversion, when SATCOM and HF data link (if installed) are lost or otherwise unavailable flight crews will not have ACARS AOC communication with company.</i></p> <p><i>Solution c): Implement the ARINC 618 RAT1 timer</i></p> <p>Upgrade ACARS router avionics (CMU or equivalent) software to include the new ARINC 618 RAT1 timer when it becomes available. This timer is intended to improve performance for FANS downlink messages during VHF-to-SATCOM transitions by additionally attempting to send a message via SATCOM when attempts to send it via VHF have not been successful for 60 seconds (such as when exiting land-based VHF coverage). This feature is available on some new aircraft types and will gradually become available for retrofit via software updates on existing aircraft.</p>
<p><b>3. “Ack-and-toss”</b></p> <p>3.1 ACARS router (CMU or equivalent) avionics may for various reasons acknowledge receipt of a FANS uplink message but then fail to deliver the message to the avionics that host the FANS applications. This is commonly known as “ack-and toss” behaviour.</p>	<p><i>Solution a) Rockwell Collins CMU-900 software problem</i></p> <p>For the 737, 747-400, 757, 767, and MD-11, Rockwell Collins certified core software -014 that fixes this problem. For the 747-8, Boeing certified core software -202 that fixes this problem.</p>
	<p><i>Solution b) Boeing 777 AIMS-2 software problem</i></p> <p>Boeing developed AIMS-2 BPV17.1 software that fixed this problem.</p>
	<p><i>Solution c) Airbus A320/A330/A340 software problem</i></p> <p>This problem occurs only in the ATSU CSB/CLR7.1 to 7.4 software versions. CSB/CLR7.5 and CSB/CLR9 that fix this problem are now certified and available.</p>
	<p><i>Solution d) ARINC 618 false-positive duplicate uplink block identifier (UBI) determination</i></p> <p>ARINC 618-8, which was published in August 2016, contains a recommended avionics enhancement that reduces the likelihood of this problem occurring. For the 777, Boeing developed AIMS-2 BPV17B software that implements the avionics enhancement. For the 787, Boeing developed CMF BPV4 software that implements the avionics enhancement. For the Honeywell CMU Mark II, Honeywell developed -522 software that implements the avionics enhancement. Similar software upgrades are or will</p>

PROBLEM / ISSUE	SOLUTIONS / ACTIONS
	<p>be available for other affected ACARS router (CMU or equivalent) avionics, although it should be noted that the Rockwell Collins CMU-900 was never subject to this problem; the way it detects duplicate uplink blocks was standardized in ARINC 618-8 as the recommended avionics enhancement. A complete solution, however, requires the Communication Service Providers (CSPs) to ensure that two sequential non-general response uplinks do not contain the same UBI value.</p>
<p><b>4. HF data link - general</b></p> <p>4.1 HF datalink performance has not been demonstrated to meet the RCP240 and RSP180 specifications, although for various reasons the avionics may send FANS downlink messages via HF datalink. This behaviour has a detrimental effect on data link performance.</p>	<p><i>Solution</i>      <i>Manually prevent HF datalink use</i></p> <p>Prevent HF datalink use manually by implementing flight crew procedures to disable HF datalink (usually by placing the HF radio used for HF datalink into voice mode).</p>
<p><b>5. Internetworking</b></p> <p>5.1 The DLMA has observed that some performance problems are caused by the challenges of effective CSP internetworking when an aircraft operator chooses to use one of the two global CSPs (ARINC or SITA) for VHF and the other global CSP for SATCOM. (The DLMA also realizes that some aircraft operators configure their avionics to first prefer regional DSPs, such as Avicom in Japan, which has not been shown to affect performance).</p>	<p><i>Solution:</i>      <i>For aircraft operators that do not configure their avionics to first prefer a regional CSP, use the same global CSP for both VHF and SATCOM</i></p> <p>It is likely that the data link performance will be improved if the same global CSP is used for both VHF and SATCOM.</p>
<p><b>6. Large Pilot Operational Response Time (PORT) values</b></p> <p>6.1 PORT is one component of the Actual Communications Performance (ACP), the other being the Actual Communications Technical Performance (ACTP). For an uplink-downlink CPDLC transaction, PORT captures the human portion of the transaction time and ACTP captures the technical (mainly network) portion of the transaction time. Accordingly, large PORT values reduce performance.</p>	<p><i>Solution:</i>      <i>Implement flight crew procedures to respond to CPDLC messages with STANDBY when appropriate.</i></p> <p>In accordance with ICAO Doc 9869, Performance-Based Communication and Surveillance (PBCS) Manual, ATS providers should exclude CPDLC transactions with STANDBY responses from performance monitoring. ICAO Doc 10037, Global Operational Data Link (GOLD) Manual explains in paragraph 4.3.2.4 when STANDBY responses are appropriate under certain circumstances:</p> <p><i>4.3.2.4 The flight crew should respond to CPDLC messages as soon as practical after they are received. For most messages, the flight crew will have adequate time to read and respond within one minute. However, the flight crew should not be pressured to respond without taking adequate time to fully understand the CPDLC message and to satisfy other higher priority operational demands. If</i></p>

PROBLEM / ISSUE	SOLUTIONS / ACTIONS
	<i>additional time is needed, the flight crew should send a RSPD-3 STANDBY response.</i>
<p><b>7. Unknown causes</b></p> <p>7.1 If a data link performance problem has an unknown cause, then the DLMA recommends submitting a problem report at <a href="http://www.fans-cra.com/">http://www.fans-cra.com/</a> so that the DLMA and other involved stakeholders can attempt to determine the cause.</p>	<p><i>Submit problem reports at <a href="http://www.fans-cra.com/">http://www.fans-cra.com/</a></i></p>
<p><b>8. Maximising access to the Classic Aero Ground Earth Station (GES) services:</b></p> <p>8.1 In the Inmarsat SATCOM system, there are a multitude of transmission paths available via the different ground stations and satellites. If one path fails, the aircraft may be able to switch to an alternate path provided the Operator Requirement Table (ORT) in the SATCOM terminal is correctly configured.</p> <p>8.2 Proper configuration of the ORT table is therefore vital for maximizing availability of SATCOM services in the NAT.</p>	<p><i>Operators are requested to ensure that they review all Service Information Letters (SILs) and Software Bulletins (SBs) released from their Satcom avionics manufacturers, taking particular care to ensure that their advice on Operator Requirement Table (ORT) set-up for optimising accessibility to Inmarsat's GES resources is taken. In doing this, it will be ensured that all available satellite/GES combinations are included in the ORT, optimising access to the communications resource. This will maximise the aircraft capability to switch to an alternate communication path in case of a failure in the SATCOM communication chain.</i></p> <p><i>Below are some links to the SATCOM manufacturers' information portals:</i></p> <p><i>Cobham: <a href="https://sync.cobham.com/satcom/">https://sync.cobham.com/satcom/</a></i></p> <p><i>Honeywell: <a href="https://myaerospace.com/">https://myaerospace.com/</a></i></p> <p><i>Thales: <a href="https://www.thalesgroup.com/en/customer-online">https://www.thalesgroup.com/en/customer-online</a></i></p> <p><i>Rockwell Collins: <a href="https://www.shopcollins.com">https://www.shopcollins.com</a> ]</i></p>
<p><b>9. Software updates</b></p> <p>9.1 Aircraft and avionics manufacturers work persistently on fixing problems that have been identified in data link operations. Periodically new software releases are issued that solve some of the problems that have been identified. Some of those fixes may improve data link performance and most of them fix issues that cause problems for pilots and air traffic controllers in the use of data link.</p> <p>9.2 To ensure the best possible functioning of the NAT air traffic control system it is of utmost importance that aircraft operators take care to always operate the latest available FANS 1/A related software version in aircraft that fly in the NAT high level airspace and to ensure that the aircraft systems are configured in an optimal manner. A list of recommended aircraft avionics software versions is provided in the table below.</p>	<p><i>Update FANS 1/A related software using the list of recommended aircraft avionics software versions provided in the table below.</i></p>

---

<b>PROBLEM / ISSUE</b>	<b>SOLUTIONS / ACTIONS</b>
9.3 It should be noted that new software versions that fix several known data link problems will become available for many aircraft types within the next year. Operators are advised to seek information from aircraft manufacturers (OEM) about the status of those new software releases.	

~~~~~

**RECOMMENDED AVIONICS DATA LINK SOFTWARE VERSIONS**

| Recommended software versions for NAT data link operations |                                                          |                                                                                                                                                             |                                                                                                                                                                                             |
|------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aircraft type                                              | FANS software                                            | ACARS software                                                                                                                                              | Notes                                                                                                                                                                                       |
| A318/A319/A320/A321                                        | CSB7.5 or CSB9.4                                         | CSB7.5 or CSB9.4                                                                                                                                            | FMS Release 2 recommended (S8 and subsequent for Thales/GE FMS; H3 and subsequent for Honeywell FMS)                                                                                        |
| A330/A340                                                  | CLR7.5 or CLR9.4                                         | CLR7.5 or CLR9.4                                                                                                                                            | MS Release 2 recommended (T6 and subsequent for Thales/GE FMS; P6 and subsequent for Honeywell FMS)                                                                                         |
| A350                                                       | CLV1.4                                                   | S4                                                                                                                                                          |                                                                                                                                                                                             |
| A380                                                       | CLA4.2                                                   | S3                                                                                                                                                          |                                                                                                                                                                                             |
| A220                                                       | DLCA-6500 with Avionics Buil 8A (Collins Proline Fusion) | Collins CMU-4000 within RIU-4010                                                                                                                            |                                                                                                                                                                                             |
| MD11                                                       | FMC Pegasus -924                                         |                                                                                                                                                             |                                                                                                                                                                                             |
| B736/B737/B738/B739<br>B37M/B38M/B39M/B3XM                 | A4 hardware: FMC U12<br>C1 hardware: FMC U13* or U14.1   | Honeywell CMU Mark II+:<br>B73x or B3xM: Core -523<br>All other: Core -523<br>Collins CMU-900:<br>Non-ATN : Core -016<br>ATN: Core -505<br>747-8: Core -203 | * There are planned ADs against the currently listed software. Updated software with AD related fixes are currently in the certification process or are already available for installation. |
| B744                                                       | Original FMC: Load 16 (not PBCS compliant)               |                                                                                                                                                             |                                                                                                                                                                                             |
|                                                            | NG FMC: NG FMC BP4                                       |                                                                                                                                                             |                                                                                                                                                                                             |
| B748                                                       | NG FMC BP4                                               |                                                                                                                                                             |                                                                                                                                                                                             |
| B752/B753                                                  | Pegasus I FMC: BP 11                                     |                                                                                                                                                             | * There are planned ADs against the currently listed software. Updated                                                                                                                      |

| Recommended software versions for NAT data link operations              |                                    |                                            |                                                                            |
|-------------------------------------------------------------------------|------------------------------------|--------------------------------------------|----------------------------------------------------------------------------|
| Aircraft type                                                           | FANS software                      | ACARS software                             | Notes                                                                      |
|                                                                         | Pegasus II FMC: BP1A               |                                            | software with AD related fixes are currently in the certification process. |
| B762/B763/B764                                                          |                                    |                                            |                                                                            |
| B772/B773/B77L/B77W                                                     | AIMS-1: BPV16 (not PBCS compliant) |                                            |                                                                            |
|                                                                         | AIMS-2: BPV17C                     |                                            |                                                                            |
| B779                                                                    | CMF and FMF entry into service     |                                            |                                                                            |
| B788/B789/B78X                                                          | CMF BPV6 and FMF BPV4              |                                            |                                                                            |
| Beechcraft 4000                                                         | Universal Avionics UNS-1           | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs                                                             |
| Bombardier Learjet<br>35, 36, 35A, 36A, 40, 40XR,<br>45, 45XR, 60, 60XR | Universal Avionics FMS SCN 1002.1  | Universal Avionics UniLink UL-80X SCN 31.3 |                                                                            |
| Bombardier Challenger 300, 350                                          | Collins Proline 21 Advanced        | Collins RIU-4000                           |                                                                            |
| Bombardier Challenger 600, 601,<br>601-1A, 601-3A, 601-3R, 604          | Universal Avionics FMS SCN 1002.1  | Universal Avionics UniLink UL-80X SCN 31.3 |                                                                            |
| Bombardier Challenger 600, 601,<br>601-1A, 601-3A, 601-3R               | Honeywell NZ6.1.1                  | Honeywell CMU MK II+                       |                                                                            |
| Bombardier Challenger 605, 650                                          | Collins Proline 21 Advanced        | Collins CMU-4000                           |                                                                            |
| Bombardier Global Express,<br>Global Express XRS, Global 5000           | Honeywell NZ6.1.1                  | Refer to applicable Service Bulletins/STCs |                                                                            |
| Bombardier Global 5000 GVFD                                             | Collins Proline Fusion             | Collins DLCA-6000                          |                                                                            |
| Bombardier Global 5500                                                  | Collins Proline Fusion             | Collins DLCA-6000                          |                                                                            |
| Bombardier Global 6000                                                  | Collins Proline Fusion             | Collins DLCA-6000                          |                                                                            |
| Bombardier Global 6500                                                  | Collins Proline Fusion             | Collins DLCA-6000                          |                                                                            |
| Bombardier Global 7500                                                  | Collins Proline Fusion             | Collins DLCA-6500                          |                                                                            |
| Bombardier Global 8000                                                  | Collins Proline Fusion             | Collins DLCA-6500                          |                                                                            |
| Cessna Citation Longitude C700                                          | Garmin G5000 SW5.1                 | Garmin G5000 SW5.1                         | Updates planned, contact OEM                                               |

| <b>Recommended software versions for NAT data link operations</b> |                                |                                            |                           |
|-------------------------------------------------------------------|--------------------------------|--------------------------------------------|---------------------------|
| <b>Aircraft type</b>                                              | <b>FANS software</b>           | <b>ACARS software</b>                      | <b>Notes</b>              |
| Dassault F50, F50EX                                               | Universal Avionics UNS-1       | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs            |
| Dassault F50, F50EX                                               | Honeywell NZ6.1.1              | Honeywell CMU MK II+                       | 3rd party STCs            |
| Dassault F2000                                                    | Universal Avionics UNS-1       | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs            |
| Dassault F2000 DX/EX/LX/S                                         | Honeywell EPIC NZ7.1.2         | Honeywell EPIC CMF 2.51                    | EASy II 4th Cert          |
| Dassault F900, F900B, F900C, F900EX                               | Honeywell NZ6.1.1              | Honeywell CMU MK II+                       |                           |
| Dassault F900 DX/EX/LX                                            | Honeywell EPIC NZ7.1.2         | Honeywell EPIC CMF 2.51                    | EASy II 4th Cert          |
| Dassault F900B                                                    | Universal Avionics UNS-1       | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs            |
| Dassault F7X                                                      | Honeywell EPIC NZ7.1.2         | Honeywell EPIC CMF 2.51                    | EASy II 4th Cert          |
|                                                                   | Honeywell NGFMS                | Honeywell EPIC CMF 3.1+                    | Contact OEM for update    |
| Dassault F8X                                                      | Honeywell NGFMS                | Honeywell EPIC CMF 3.0                     | EASy III 2nd Cert         |
|                                                                   | Honeywell NGFMS                | Honeywell EPIC CMF 3.1+                    | Contact OEM for update    |
| Dassault F10X                                                     | Honeywell NGFMS                | Honeywell EPIC CMF 3.4                     | Contact OEM for update    |
| Embraer E135/145<br>"Legacy 600/650" business jet<br>version      | Honeywell NZ6.1.1              | Honeywell CMU MK III Bld 1.29              |                           |
| Embraer E170/190<br>"Lineage 1000" business jet version           | Honeywell NGFMS                | Honeywell EPIC CMF 3.0                     |                           |
| Embraer E170/175/190/195                                          | Honeywell NGFMS                | Honeywell EPIC CMF 3.0                     |                           |
|                                                                   | Honeywell NGFMS                | Honeywell EPIC CMF 3.4                     | Update ready, contact OEM |
| Embraer E2-190/195                                                | Honeywell NGFMS                | Honeywell EPIC CMF 3.3                     |                           |
|                                                                   | Honeywell NGFMS                | Honeywell EPIC CMF 3.4                     | Update ready, contact OEM |
| Gulfstream G100                                                   | Universal Avionics UNS-1       | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs            |
| Gulfstream G150                                                   | Universal Avionics UNS-1       | Universal Avionics UniLink UL-80X SCN 30.4 | Gulfstream STC            |
| Gulfstream G200                                                   | Collins Proline 4 (FMC SW 4.0) | Collins CMU-1000                           | Gulfstream STC            |
| Gulfstream G200                                                   | Universal Avionics UNS-1       | Universal Avionics UniLink UL-80X SCN 30.4 | Gulfstream STC            |

| Recommended software versions for NAT data link operations |                          |                                            |                       |
|------------------------------------------------------------|--------------------------|--------------------------------------------|-----------------------|
| Aircraft type                                              | FANS software            | ACARS software                             | Notes                 |
| Gulfstream G200                                            | Universal Avionics UNS-1 | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs        |
| Gulfstream G280                                            | Collins Proline Fusion   | DLCA-6000                                  | Production Standard   |
| Gulfstream GII, GIIB, GIII                                 | Honeywell NZ6.1.1        | Honeywell CMU MK III Bld 1.29              | 3rd party STCs        |
| Gulfstream GII, GIIB, GIII                                 | Universal Avionics UNS-1 | Universal Avionics UniLink UL-80X SCN 30.4 | 3rd party STCs        |
| Gulfstream G450                                            | Honeywell EPIC NZ7.1.2   | Honeywell EPIC CMF 2.6                     | (ASC 912C)            |
| Gulfstream G550                                            | Honeywell EPIC NZ7.1.2   | Honeywell EPIC CMF 2.6                     | (ASC 912C)            |
| Gulfstream GIV, GIV-SP                                     | Honeywell NZ6.1.1        | Honeywell CMU MK III Bld 1.29              |                       |
| Gulfstream GV, GV-SP                                       | Honeywell NZ6.1.1        | Honeywell CMU MK III Bld 1.29              |                       |
| Gulfstream G500                                            | Honeywell NGFMS          | Honeywell EPIC CMF 3.1                     | (Type Cert)           |
| Gulfstream G600                                            | Honeywell NGFMS          | Honeywell EPIC CMF 3.1                     | (Type Cert)           |
| Gulfstream G650                                            | Honeywell NGFMS          | Honeywell EPIC CMF 3.0                     | (ASC 902B)            |
|                                                            | Honeywell NGFMS          | Honeywell EPIC CMF 3.1                     | New Block 3 late 2023 |
| Gulfstream G700                                            | Honeywell NGFMS          | Honeywell EPIC CMF 3.5                     | New Type Cert Q2 2024 |
| Gulfstream G800                                            | Honeywell NGFMS          | Honeywell EPIC CMF 3.5                     | New Type Cert Q4 2025 |

- END -



# NAT OPS BULLETIN

Serial Number: **2018\_003\_Revision 1**

Issued: **23 February 2021**

Subject: **Waypoint Insertion / Verification Special Emphasis Items** Effective: **23 February 2021**

Originator: **NAT SPG**

The purpose of this North Atlantic Operations (NAT OPS) Bulletin is to provide guidance to North Atlantic (NAT) operators on material to be included in pilot and dispatcher training programs and operations manuals with the intent of raising pilot and dispatcher awareness of the importance of following existing procedures where half degree waypoint identifiers are used.

*Any queries about the content of the attached document should be addressed to:*

*ICAO EUR/NAT Office: [icaoearnat@paris.icao.int](mailto:icaoearnat@paris.icao.int)*

## **NOTICE**

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

*The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR](http://www.icao.int/EURNAT/EUR) & NAT Documents, NAT Documents, then NAT Ops Bulletins.*

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

**NAT OPERATIONS BULLETIN – WAYPOINT INSERTION / VERIFICATION SPECIAL EMPHASIS ITEMS****1. INTRODUCTION**

- 1.1 Operator attention is directed to Attachment A.** It provides a “quick reference” for the Special Emphasis Items contained in this bulletin. It is intended to be used as a job aid for operators developing pilot and dispatcher training material.
- 1.2** The following is an explanation of the terms “should”, “must” and “shall” as used in this bulletin.
- a) “Should” is used to indicate a recommended practice or policy that is considered as desirable for the safety of operations.
  - b) “Shall” and “must” are used to indicate a practice or policy that is considered as necessary for the safety of operations.
- 1.3 Special Emphasis Items for Operators.** The Special Emphasis Items (SEI) listed below should be incorporated into operator training programs and operations manuals with the intent of raising pilot and dispatcher awareness of the importance of following procedures in an environment where half degree waypoints are applied. Each SEI is followed by an explanation of the factors leading it to be identified as an SEI.

**2. PILOT TRAINING ON MAP AND FMC DISPLAYS OF HALF DEGREE AND WHOLE DEGREE WAYPOINTS:**

- 2.1** To mitigate misinterpretation of waypoint coordinates, operator initial and re-current training programs and operations manuals must incorporate training and guidance to enable pilots to understand map and FMC displays of half degree and whole degree waypoints regardless of the waypoint format being used for waypoint FMC input.

*Explanation*

- a) Map displays and certain FMC pages generally do not display full waypoint degrees **and** minutes, e.g. when the full 13 latitude/longitude characters are used to insert half degree waypoints. See Figure 1 and Figure 2 in **Attachment B**.

**3. AIRCRAFT NAVIGATION DATABASE (NDB) WAYPOINT IDENTIFIERS:**

- 3.1** In 2015, Canada, the United Kingdom (UK), and Iceland published Aeronautical Information Circulars (AIC) strongly advocating that aircraft NDB vendors and flight planning services not provide operators with half-degree waypoint identifiers in the ARINC 424, paragraph 7.2.5. “N-prefix” format (e.g., N5250 = 52°30’ NORTH 050°00’ WEST). (See Canada AIC 23/15 (23 July 2015), UK AIC 059/2015 (9 July 2015) and AIP Iceland ENR 1.3.1.2).
- 3.2** NAT operators should use a full latitude/longitude (e.g., 13-character) input for waypoints containing both half-degree and whole degrees of latitude and whole degrees of longitude.
- 3.3** NAT operators **with an operational need to populate the aircraft NDB** with a 5-character waypoint identifier should ensure that the aircraft NDB vendors and flight planning services use an alternate half-degree of latitude 5-character format such as Hxxyy, where xx = degrees and 30 minutes of NORTH latitude and yy = degrees of WEST longitude (e.g., H5250 = 52°30’ NORTH 050°00’ WEST). (It is recognized that, for whole degree waypoint inputs, such operators will likely continue using the ARINC 424, 7.2.5 “N-suffix” format (e.g., 5250N = 52°00’ NORTH 050°00’ WEST)).
- 3.4** The CPDLC route clearance will be uplinked in a full Lat/Long format that will be unfamiliar to the flight crews using an ARINC 424, 7.2.5 format. **Operators with an operational need to populate the aircraft NDB** with a 5-character waypoint identifier format need to ensure flight crews are

properly trained on the use of the full Lat/Long waypoint format in uplink messages. They must also emphasize the necessity for proper waypoint verification procedures.

#### *Explanation*

- a) Half-degree waypoint identifiers in the ARINC 424, paragraph 7.2.5 “N-prefix” format have led to a number of Gross Navigation Errors (GNEs) and Lateral Deviations. The guidance for waypoint insertion in this document is intended to remove the potential for such errors. They occur when a pilot intending to input a waypoint defined by a half-degree of latitude inadvertently loads a waypoint containing a whole-degree of latitude, or vice versa, because the “N” is not loaded in the correct pre-fix or suffix position.

3.5 Oceanic Clearances containing a re-route issued by voice/OCL may include half-degree waypoints. Operators should ensure that their flight crew procedures and associated training are sufficiently robust to mitigate against navigational error due to waypoint insertion errors.

3.6 NOTE - Flight Crews are reminded they have the option to respond “UNABLE” to an oceanic re-route and negotiate with ATC accordingly.

#### **4. PILOT PROCEDURES FOR VERIFYING WAYPOINT DEGREES AND MINUTES INSERTED INTO AIRCRAFT NAVIGATION SYSTEMS:**

4.1 Procedures must be used to display and verify the DEGREES and MINUTES loaded into the Flight Management Computer (FMC) for the “un-named” (Lat/Long) waypoints defining the route contained in the oceanic clearance. (The “Sample Oceanic Checklist” NAT OES Bulletin refers).

4.2 Regardless of FMC waypoint format and entry method, crew procedures should be designed to promote strong crew resource management techniques, to prevent opportunities for error occurring as a result of confirmation bias and to generally maintain an attitude of healthy suspicion. Accordingly, the waypoint verification procedures should be conducted as detailed below.

- During pre-flight long-range navigation system (LRNS) programming, both pilots independently verify the full latitude and longitude coordinates of “un-named” (Lat/Long) waypoints defining the expected route of flight within oceanic airspace as entered in the FMC.
- Upon receipt of a revised oceanic clearance (i.e., one not conforming to the flight planned route), both pilots independently verify the full latitude and longitude coordinates of “un-named” (Lat/Long) waypoints defining the route contained in the revised oceanic clearance.
- Approaching an oceanic waypoint, one pilot should verify the full latitude and longitude coordinates of that waypoint in the FMC, the NEXT and NEXT +1 waypoints, while the other pilot crosschecks the latitude and longitude coordinates against the master flight plan/oceanic clearance.

#### *Explanation*

- a) Due to the factors in the map and FMC display of half degree and whole degree waypoints, it is imperative that pilots follow the procedure in this document to avoid lateral errors caused by incorrect insertion of waypoints. Verification of the full DEGREES and MINUTES of oceanic waypoints loaded into the FMC is a critical step in ensuring a proper navigational load.

#### **5. PILOT TRACK AND DISTANCE CHECK:**

5.1 It is strongly recommended that pilot pre-flight and in-flight procedures call for the pilot to compare the track and distance between waypoints shown on the Computer Flight Plan (CFP) to those displayed by the FMC. (The NAT “Sample Oceanic Checklist” Bulletin refers).

5.2 Pilots should be aware that waypoint insertion errors of half degree of latitude may in some cases result in only small differences in track and distance, however, the track and distance check can help

prevent waypoint insertion errors of one degree or more that have been observed in oceanic operations.

*Note: the currency of magnetic variation tables loaded into aircraft navigation databases and the point at which the track is measured affect the track displayed on the FMC by as much as  $\pm 3$  degrees.*

#### *Explanation*

- a) This check remains valuable because waypoint insertion errors are **not** limited to half degree errors and waypoint insertion errors of one degree or more have been observed in oceanic operations. Waypoint insertion errors of half degree produce a small difference in leg segment track and distance, however, as noted above, waypoint insertion errors are not limited to half degree.

## **6. PILOT ACTION WHEN NOTIFIED BY ATC OF POSSIBLE DEVIATION FROM CLEARED TRACK:**

- 6.1 Flight crews are advised that, should they be notified that ATC systems indicate the aircraft is not flying the cleared route, they should immediately display the full degrees and minutes loaded into the FMC for the NEXT and NEXT + 1 waypoints, and verify against the cleared route before responding.

Voice message example:

“SHANWICK CONFIRMS YOUR POSITION REPORT INDICATES INCORRECT ROUTING. CHECK FULL DEGREES AND MINUTES LOADED INTO FMC. YOUR CLEARED ROUTE IS [route]”

CPDLC message example:

“YOUR POSITION REPORT INDICATES INCORRECT ROUTING. CHECK FULL DEGREES AND MINUTES LOADED INTO FMC. YOUR CLEARED ROUTE IS [route].”

- 6.2 When ATC notifies the pilot that the aircraft has indicated it has already deviated from the cleared track (UM169f: ADS-C INDICATES OFF ROUTE. ADVISE INTENTIONS), the pilot shall immediately display the full DEGREES and MINUTES loaded into the FMC for the NEXT waypoint, and verify against the cleared route.

#### *Explanation*

- a) Due to the factors in the map and FMC display of half degree and whole degree waypoints, it is imperative that pilots follow the procedure in this document to avoid lateral errors caused by incorrect insertion of waypoints. Verification of the full DEGREES and MINUTES of oceanic waypoints loaded into the FMC, when notified by ATC of possible deviation from cleared track, is a critical step in ensuring a proper navigational load.

## **7. WEBSITES**

- 7.1 The ICAO EUR/NAT Office Website is at: [www.icao.int/eurnat](http://www.icao.int/eurnat). Click on **EUR & NAT Documents** >> **NAT Documents** to obtain NAT Operations Bulletins and related project planning documents.

## **8. CONTACTS**

- 8.1 The following may be contacted for information or to provide feedback: [icaoearnat@paris.icao.int](mailto:icaoearnat@paris.icao.int)

~~~~~

**ATTACHMENT A – SUMMARY OF SPECIAL INTEREST ITEMS  
CONTAINED IN THIS NAT OPS BULLETIN**

1. Aircraft Navigation Database (NDB) Waypoint Identifiers:

Canadian AIC 23/15, UK AIC 059/2015 and AIP Iceland ENR 1.3.1.2 strongly advocate that aircraft NDB vendors and flight planning services **not** provide operators with **half-degree** waypoint identifiers in the ARINC 424, paragraph 7.2.5 “N-prefix” format (e.g., *N5250 = 52°30’ NORTH 050°00’ WEST*).

NAT operators should use a full latitude/longitude (e.g., 13-character) input for waypoint coordinates. NAT operators **with an operational need to populate the aircraft NDB** with a 5-character waypoint identifier should ensure that the aircraft NDB vendors and flight planning services use an alternate half-degree of latitude 5-character format e.g., *H5250 = 52°30’ NORTH 050°00’ WEST* (paragraph 3 refers)

2. Pilot Training on Map and FMC Displays of half Degree and Whole Degree Waypoints:

Operator initial and re-current training programs and operations manuals must have incorporated training and guidance to enable pilots to understand map and FMC displays of half degree and whole degree waypoints (paragraph 2 and **Attachment B** Figure 1 and Figure 2 refer).

3. Pilot Procedures for Verifying Waypoint Degrees and Minutes Inserted into Aircraft Navigation Systems:

Pilot Pre-flight and In-flight procedures must call for each pilot to independently display and verify the DEGREES **and** MINUTES loaded into the Flight Management Computer (FMC) for the “un-named (Lat/Long) waypoints defining the cleared route of oceanic flight. This procedure is necessary regardless of the FMC waypoint input format being used. Procedures must call for both pilots to independently verify the waypoint coordinates inserted and concur on their accuracy prior to route activation.

4. Pilot Track and Distance Check:

It is strongly recommended that pilot pre-flight and in-flight procedures call for the pilot to compare the track and distance between waypoints shown on the Computer Flight Plan (CFP) to those displayed by the FMC.

Pilots should be aware that waypoint insertion errors of half degree of latitude may in some cases result in only small differences in track and distance, however, the track and distance check can help prevent waypoint insertion errors of one degree or more that have been observed in oceanic operations.

Note: the currency of magnetic variation tables loaded into aircraft navigation databases and the point at which the track is measured affect the track displayed on the FMC by as much as +/- 3 degrees.

5. Pilot Action When Notified By ATC of Possible Deviation From Cleared Track:

When ATC notifies the pilot that ATC systems indicate that the aircraft is not flying the cleared track, the pilot shall immediately display the full DEGREES and MINUTES loaded into the FMC for the NEXT waypoint, and verify against the oceanic clearance.

~~~~~

**ATTACHMENT B – EXAMPLE FMC AND MAP DISPLAYS (PARAGRAPH 2 REFERS)**

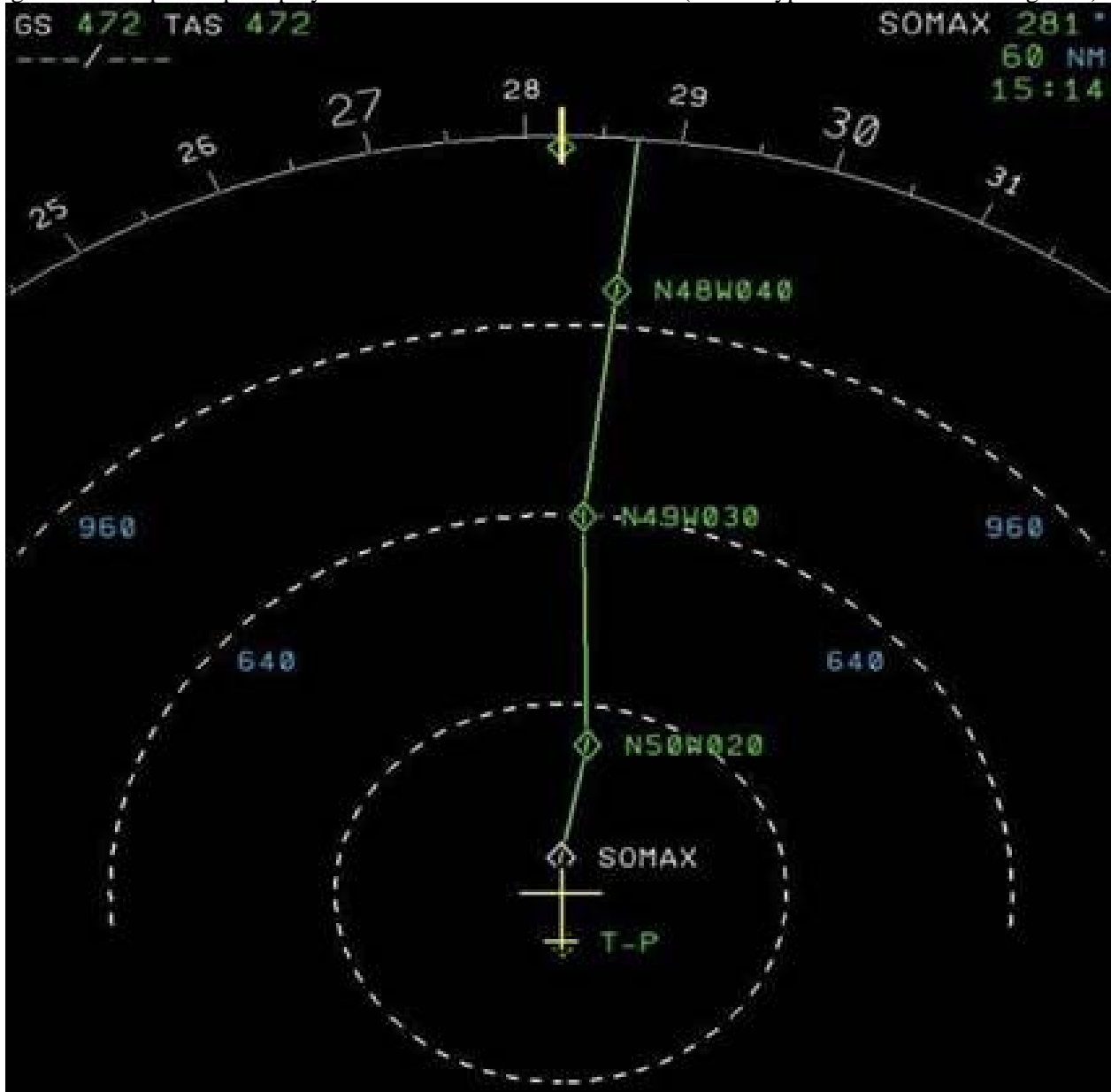
*Note: Figure 1 and Figure 2 are intended to support paragraph 2 (Pilot training on Map and FMC Displays of half and Whole Degree Waypoints). The figures emphasize that for a large number of aircraft, the input of waypoints containing whole degrees of latitude and waypoints containing half-degrees of latitude will result in identical 7-character FMC and waypoint map displays.*

Figure 1 Example FMC Display: Full Waypoint Latitude and Longitude (13-characters) inserted into FMC



1. 52 degrees-30 minutes North latitude, 20 degrees West longitude inserted into the FMC using full latitude and longitude degrees, minutes and seconds (i.e., 13 characters)
2. The waypoint IDENT is truncated to 7 characters with **no display of minutes of latitude.**

Figure 2 Example Map Display: 13-characters Inserted into FMC (Full Waypoint Latitude and Longitude)



1. 50 degrees-30 minutes North, 20 degrees West is displayed in 7 characters (N50W020).
2. **Minutes of latitude are not displayed.**
3. The Map display would be the same for 50 degrees-00 minutes North, 20 degrees West.

— END —



# NAT OPS BULLETIN

Serial Number: **2017\_004\_Rev 2**

Issued: 14Jun2022

Subject: **NAT Data Link Special Emphasis Items**

Effective: 14Jun2022

Originator: **NAT SPG**

The purpose of this North Atlantic Operations Bulletin is to provide background information and guidance material to North Atlantic (NAT) operators that could be included in pilot and dispatcher training programs and operations manuals to best prepare them for FANS 1/A (CPDLC/ADS-C) operations in the NAT to include the use of CPDLC route clearance uplinks.

## Introduction

FANS data link is utilized in the NAT Region for communication via Controller Pilot Data Link Communication (CPDLC) and position reporting via Automatic Dependent Surveillance-Contract (ADS-C).

AIS publications of the NAT ATS Provider States should be consulted to determine the extent of current implementation in each of the NAT OCAs. Operational procedures to be used are specified in the **ICAO Doc 10037 Global Operational Data Link (GOLD) Manual**. These procedures are intended to facilitate the uniform application of Standards and Recommended Practices contained in:

- Annex 2 — Rules of the Air,
- Annex 10 — Aeronautical Telecommunications and
- Annex 11 — Air Traffic Services,
- The provisions in the Procedures for Air Navigation Services — Air Traffic Management (PANS ATM, Doc 4444) and, when applicable, the Regional Supplementary Procedures (Doc 7030).

Chapter 4 of the GOLD 'Flight Crew Procedures' is intended to assist operators in the development of appropriate procedures, documentation and training programs that ensure flight crews are knowledgeable in data link operations specific to aircraft type.

Chapter 4 is constructed as follows:

- General overview
- Differences between voice communications and CPDLC
- Logon procedures
- CPDLC messaging
- ADS-C contracts
- Non routine and emergency procedures.

This Bulletin may be updated, as necessary, as progress is made toward improved FANS 1/A (CPDLC/ADS-C) data link connectivity in the NAT region.

**Any queries about the content of the attached document should be addressed to:**

ICAO EUR/NAT Office: [icaoearnat@paris.icao.int](mailto:icaoearnat@paris.icao.int)

Iain Brown: [iain.brown@nats.co.uk](mailto:iain.brown@nats.co.uk)

## NOTICE

*NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.*

The NAT OPS Bulletin Checklist is available at [www.icao.int/EURNAT/EUR & NAT Documents](http://www.icao.int/EURNAT/EUR & NAT Documents), [NAT Documents](#), then [NAT Ops Bulletins](#).

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.

---

## NAT OPERATIONS BULLETIN – FANS 1/A (CPDLC/ADS-C) SPECIAL EMPHASIS ITEMS

### 1. Purpose of Bulletin – FANS 1/A (CPDLC/ADS-C) Special Emphasis Items.

- 1.1 The purpose of this bulletin is to provide background information and guidance material to North Atlantic (NAT) operators that could be included in pilot and dispatcher training programs and operations manuals to best prepare them for FANS 1/A (CPDLC/ADS-C) operations in the NAT to include the use of CPDLC route clearance uplinks.
- 1.2 With the increasing application of performance-based separations within the NAT Region, it is important that FANS 1/A (CPDLC/ADS-C) data link operations are functional so as to reduce impact and workload on both ATC and flight crews.
- 1.3 Operator attention is directed to Attachment A, which provides a “quick reference” for FANS 1/A (CPDLC/ADS-C) flight crew procedures. It is intended to be used as an aid for operators developing pilot training material.
- 1.4 The following is an explanation of the terms “should”, “must” and “shall” as used in this bulletin.
  - a) “Should” is used to indicate a recommended practice or policy that is considered as desirable for the safety of operations.
  - b) “Shall” and “must” are used to indicate a practice or policy that is considered as necessary for the safety of operations.

### 2. FANS 1/A (CPDLC/ADS-C) Overview

- 2.1 Data link services, such as CPDLC and ADS-C, provide communications and position report information that are intended to support safer and more efficient air traffic management and increase capacity.
- 2.2 **Controller Pilot Data Link Communications (CPDLC)**
  - 2.2.1 CPDLC significantly improves ATC intervention capabilities through enhanced communications which allows the exchange of uplink and downlink messages between an aircraft and an ATS Unit.
  - 2.2.2 An aircraft can have a maximum of two CPDLC connections established concurrently, each with a different ATS Unit.
    - a) A CPDLC connection immediately becomes active when established if **no** previous CPDLC connection exists at that time. An active CPDLC connection allows an ATS Unit and the aircraft to exchange CPDLC messages. The ATS Unit with which an aircraft has an active CPDLC connection is referred to as the Current Data Authority (CDA).
    - b) An inactive connection Next Data Authority (NDA) can be established upon completion of the logon procedure if a previous CPDLC connection exists with the aircraft.
  - 2.2.3 Under normal circumstances, the ATS Unit with the CDA connection will manage its CPDLC connections, including transferring and terminating the connection when no longer needed. CPDLC transfers will be initiated before the aircraft transits from the current ATS Unit to another CPDLC-capable ATS Unit, and will terminate the connection as the aircraft leaves the ATS Unit’s airspace. These transfers are automatic and should be seamless to the crew without any action required.
  - 2.2.4 Should a datalink transfer fail to complete, the transferring ATS Unit will be alerted, which may result in a request to the crew to disconnect CPDLC and to either perform a re-logon to recycle the transferring process, or to logon to the next ATS Unit.

---

2.2.5 It is imperative that equipped aircraft are logged on FANS 1/A CPDLC/ADS-C prior to oceanic entry. This can be accomplished with an initial logon with a “domestic” data link capable ATS Unit which then allows for an automatic transfer to the oceanic ATS Unit. If entering from an area where a data link connection has not been established, initiate the logon with the oceanic ATS Unit between 15 and 25 minutes prior to the boundary. Pilots should ensure the correct CPDLC identifier is populated for the “active centre” [active ATC] (CDA).

### 2.3 Automatic Dependent Surveillance-Contract (ADS-C)

2.3.1 ADS-C uses various systems on board the aircraft to automatically provide aircraft position, altitude, speed, intent and meteorological data, which can be sent in a report to an ATS Unit or AOC facility ground system for surveillance and route conformance monitoring.

2.3.2 When the ATS ground system receives a logon request message, the Flight Data Processing System (FDPS) will automatically initiate ADS contracts with the aircraft. These contract requests are dealt with by the avionics systems and are transparent to the flight crew. The following contracts are typically formed and provide alerts to the controller;

- a) Periodic contract with a typical interval of 10-14 minutes. Aircraft avionics will send an updated position report which will include level, time and NEXT and NEXT+1 waypoints inserted in the active flight plan.
- b) Event contract for the following events:
  - Waypoint change event (WCE). Waypoint change event will trigger an automatic position report (which will include level, time and NEXT and NEXT+1 waypoints) whenever the aircraft passes a waypoint contained within the active flight plan, or whenever a crew amends a waypoint that is either NEXT waypoint or NEXT+1 waypoint in the active flight plan.
  - Lateral deviation event (LDE). Deviation contract that will trigger an automatic position report (which will include level, time and NEXT and NEXT+1 waypoints) whenever the aircraft deviates from the cleared route beyond Strategic Lateral Offset (SLOP) provisions.
  - Level range deviation event (LRDE). Deviation contract that will trigger an automatic position report (which will include level, time and NEXT and NEXT+1 waypoints) whenever the aircraft deviates from the cleared level by 300ft or more.
  - Vertical Rate Change Event (VRE). Deviation contract that will trigger an automatic position report (which will include level, time and NEXT and NEXT+1 waypoints) whenever the rate of descent exceeds 5000 feet per minute.
- c) Demand contract which can be used by the controller to trigger an instantaneous position report by the aircraft avionics.
- d) Emergency contract ADS-C also supports emergency alerting. An ADS-C emergency report is a periodic report that is tagged as an ‘emergency’ report, allowing the emergency situation to be highlighted to ATC.

---

### 3. FANS 1/A (CPDLC/ADS-C) LOGON and Subsequent Transfers.

- 3.1 The logon is the first step in the data link process and is initiated either by the flight crew, or automatically following data link transfer from a previous ATS Unit. Once the logon is complete, the ATS Unit will request a CPDLC connection and/or ADS-C contracts, which should be automatically accepted by the aircraft.
- 3.2 Provisions concerning the establishment of FANS 1/A (CPDLC/ADS-C) connection are contained within Annex 10, Volume II, Chapter 8, 8.2.8 and ICAO Doc 4444, paragraph 14.2.
- 3.3 An initial logon request, when the aircraft is south of 82° North, is required regardless of whether or not ATS surveillance services are being provided. CPDLC provides communication redundancy and controllers will in many cases use CPDLC for communication even though the pilot is maintaining a listening watch on the assigned Direct Controller Pilot Communication (DCPC) VHF frequency.
- 3.4 At and north of 82° North, data link services cannot be guaranteed for aircraft equipped with Inmarsat SATCOM due to limitations in satellite coverage. However, this does not prevent flights from trying to establish a data link connection. Such limitations do not apply to aircraft equipped with Iridium SATCOM.

*Note: Data link services for Northbound flights that fly north of 82° North and are not equipped with Iridium SATCOM data link are terminated at 82° North.*

- 3.5 If not already logged on prior to North Atlantic entry, pilots should initiate a FANS 1/A (CPDLC/ADS-C) logon in the following circumstances;
- Flights departing airports in close proximity to the oceanic boundary that have not established a FANS logon with the ATS Unit prior to the oceanic ATS Unit.
  - Flights that will enter the NAT Region from an area where data link connections have not been established or maintained or,
  - When instructed to do so by ATC (i.e. following a failed data link transfer).
- 3.6 Pilots should enter the CPDLC/ADS-C 4 letter identifier located on the charted FIR boundary for the appropriate ATS Unit ensuring that the aircraft registration and flight number are correct.
- 3.7 Once the unique aircraft registration and flight number are correlated by the FDPS, the ATS Unit will automatically establish the appropriate CPDLC connections and the ADS-C contracts.
- 3.8 Because of the necessity for the Oceanic ATS Units to ensure FANS data link capability, all flights equipped with and prepared to operate FANS 1/A (or equivalent) CPDLC and ADS-C data link systems **must** have either an established FANS 1/A (CPDLC/ADS-C) connection, or make an initial logon between 15 and 25 minutes prior to the oceanic boundary.

**If no logon is detected by ATS Unit prior to the oceanic boundary, the air traffic controller will be alerted and a late revision to the oceanic entry profile could occur.**

- 3.9 Under normal circumstances following initial logon, data link operations are seamless. However, the data link communications network is complex and made up of a number of components which can result in unsuccessful operation. Whenever a connection or transfer issue is identified, the controlling ATS Unit will normally try a reset of the connection by requesting the logon be re-cycled, even though the aircraft may be indicating that the connection is working normally.
- 3.10 Despite indications in the cockpit of the correct active centre (CDA), ATC may issue an instruction to “DISCONNECT CPDLC AND LOG ON TO [ATSU].” It is vitally important to act on this instruction to ensure that the current flight profile can be maintained.

---

#### 4. CPDLC Route Clearance Uplinks

- 4.1 CPDLC route clearance uplinks are used by ATC to amend oceanic routing.
- 4.2 If a clearance is received that can be automatically loaded into the FMS (e.g. via a LOAD prompt), the flight crew should load the clearance into the FMS and review it before responding with WILCO.
- 4.3 Flight crews must be familiar with the proper loading and execution of the following CPDLC route clearance uplinks;
- a) PROCEED DIRECT TO (position)
    - I. Instruction to proceed directly to the specified position
  - b) CLEARED TO (position) VIA (route clearance)
    - I. Instruction to proceed to the specified position via the specified route
    - II. This uplink may not show the “VIA ROUTE CLEARANCE” until it is loaded
    - III. This is not a “direct” to the CLEARED TO waypoint. It is a clearance to the waypoint via the route specified.
  - c) CLEARED (route clearance)
    - I. Instruction to proceed via the specified route
    - II. This uplink may not show the “ROUTE CLEARANCE” until it is loaded
  - d) AT (position) CLEARED (route clearance)
    - I. Instruction to proceed from the specified position via the specified route
    - II. This uplink may not show the “ROUTE CLEARANCE” until it is loaded

Note. — Experience shows that flights crews often misunderstand the uplink message CLEARED TO (position) VIA (route clearance) when they fail to load the message and incorrectly fly directly to the CLEARED TO position. Or, even after loading, they perceive the clearance as “direct” to the “CLEARED TO” position.

Note. — FMS waypoint weather data (winds and temperature) may be lost depending on the route clearance message received. Flight crews should verify the weather data as they may need to re-enter the weather data for proper FMS predictions.

#### 5. Operator/Aircraft Eligibility.

- 5.1 Operators should ensure that all flights filed to operate in Data Link Mandate (DLM) airspace are:
- a) Equipped with and prepared to operate FANS 1/A (or equivalent) CPDLC and ADS-C datalink systems. (NAT Regional Supplementary Procedures (ICAO Doc 7030) paragraphs 3.4 and 5.5 for CPDLC and ADS-C respectively).
  - b) Equipped with either Inmarsat or Iridium SATCOM equipment.

*Note. – HF data link does not meet NAT DLM requirements.*

#### 6. Flight Planning Provisions

- 6.1 Operators must file the correct ICAO Flight Plan annotations in Items 10 and 18 to indicate that FANS 1/A (CPDLC/ADS-C) required are operational for the flight;
- a) Item 10a (Radio communication, navigation and approach aid equipment and capabilities).

- 
- Insert “J5” to indicate FANS 1/A (or equivalent) Inmarsat CPDLC SATCOM and/or “J7” to indicate FANS 1/A (or equivalent) CPDLC Iridium SATCOM data link equipage and operation;
- b) Item 10b (Surveillance equipment and capabilities)
- Insert “D1” to indicate FANS 1/A (or equivalent) ADS-C equipage and operation.

## 7. Additional Requirements

- 7.1 Since SATCOM is required in oceanic airspace to maintain data link connectivity, pilots should ensure that SATCOM is functional prior to oceanic entry.
- 7.2 Even though a CPDLC connection may be active, flight crews are responsible for responding to SATVOICE calls, conducting HF SELCAL checks or maintaining a listening watch on the assigned frequency while in the NAT region.
- 7.3. Prior to exiting NAT oceanic airspace and transitioning into a domestic area, the transferring ATS Unit will uplink the appropriate voice frequency. If no such message is received prior to exiting, crews should request the frequency by voice to ensure contact with the ATS Unit *before* oceanic exit.

## 8. Contingency Procedures

- 8.1 FANS 1/A (CPDLC/ADS-C) procedures for loss of data link connectivity.
- **FANS 1/A (CPDLC/ADS-C) Data Link Equipment Failure Prior to Departure.** If a flight experiences a FANS data link failure **PRIOR TO DEPARTURE**, the flight should flight plan so as to remain clear of NAT DLM airspace
  - **FANS 1/A (CPDLC/ADS-C) Data Link Equipment Failure After Departure But Prior to NAT DLM Airspace.** If a flight experiences a FANS data link failure **AFTER DEPARTURE BUT PRIOR TO ENTERING AIRSPACE**, the flight should contact ATC and request a revised clearance that will keep it clear of NAT DLM airspace.
  - **FANS 1/A (CPDLC/ADS-C) Data Link Equipment Failure After Entering NAT DLM Airspace Track.** If a flight experiences a FANS data link failure **WHILE OPERATING IN NAT DLM AIRSPACE**, ATC must be immediately advised. Such flights may be re- cleared to exit NAT DLM airspace, but consideration will be given to allowing the flight to remain in the airspace, based on tactical considerations.

## 9. Websites

The ICAO EUR/NAT Office Website is at: [www.icao.int/eurnat](http://www.icao.int/eurnat). Click on **EUR & NAT Documents >> NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project planning documents.

Also hosted within the same location is a “FANS-Video-Link” which contains an animated video that supports the material contained within this NAT Ops Bulletin.

---

## 10. Contacts

The following individuals may be contacted for information or to provide feedback on FANS 1/A (CPDLC/ADS-C) operations:

|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UK NATS<br>Manager International Coordination<br>Shanwick Oceanic<br>NATS Prestwick Centre<br>Fresson Avenue<br>PRESTWICK<br>KA9 2GX<br>Direct line: +44(0) 7973847091<br>E-mail: <a href="mailto:iain.brown@nats.co.uk">iain.brown@nats.co.uk</a> | NAV CANADA<br>Gander Area Control Centre<br>P.O. Box 328<br>Gander, NL A1V 1W7<br>Attn:<br>Gander Unit Procedures Office<br>Direct line: +1 709-651-5223<br>E-mail: <a href="mailto:atlupoqx@navcanada.ca">atlupoqx@navcanada.ca</a> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

---

## ATTACHMENT A – SUMMARY OF FANS 1/A (CPDLC/ADS-C) SPECIAL EMPHASIS ITEMS CONTAINED IN THIS NAT OPS BULLETIN

**Special Emphasis Items for FANS 1/A (CPDLC/ADS-C) Procedures.** The Special Emphasis Items (SEI) listed below should be incorporated into operator training programs and operations manuals with the intent of raising pilot and dispatcher awareness of the importance of following proper FANS 1/A (CPDLC/ADS-C) procedures in the NAT.

### **Data Link Requirements**

The NAT Data Link Mandate (DLM) requires aircraft to be equipped with, and operating, CPDLC and ADS-C in the NAT region. Currently, the mandate incorporates FL290 to FL410 inclusive.

See NAT Regional Supplementary Procedures (ICAO Doc 7030) paragraphs 3.4 and 5.5 for CPDLC and ADS-C respectively and NAT Guidance Document (NAT Doc 007 paragraph 1.8) for further details on where the NAT DLM is not applicable.

### **Operator/Aircraft Eligibility and Flight Planning Provisions:**

- Equipped with and prepared to operate FANS 1/A (or equivalent) CPDLC and ADS-C datalink systems. (NAT Regional Supplementary Procedures (ICAO Doc 7030) paragraphs 3.3.2 and 5.4.2 for CPDLC and ADS-C respectively.)
- Insert “J2” to indicate FANS 1/A (or equivalent) CPDLC HF DL, “J5” to indicate FANS 1/A (or equivalent) Inmarsat CPDLC SATCOM and/or “J7” to indicate FANS 1/A (or equivalent) CPDLC Iridium SATCOM data link equipment and operation in Item 10a (Radio communication, navigation and approach aid equipment and capabilities) of flight plan. *Note. – HF data link does not meet NATDLM eligibility requirements.*
- Insert “D1” in field 10b to indicate FANS 1/A (or equivalent) ADS-C equipment and operation.

### **Flight Crew**

- Must ensure a FANS 1/A (CPDLC/ADS-C) connection prior to entering NAT oceanic airspace, Connections are essential for ATC to be able to plan the most optimal oceanic profiles, provide more capacity, and to use ADS-C for route conformance along with efficient and expeditious communications through CPDLC.
- Must be proactive in ensuring the flight is connected to the correct ATS Unit.
- Must follow ATC instruction to “DISCONNECT CPDLC AND LOG ON TO [ATSU]” if advised.
- Must ensure SATCOM and HF functionality
- Must be familiar with the proper loading and execution of the following CPDLC route clearance uplinks;
  - a) PROCEED DIRECT TO (position)
    - I. Instruction to proceed directly to the specified position
  - b) CLEARED TO (position) VIA (route clearance)
    - I. Instruction to proceed to the specified position via the specified route
    - II. This uplink may not show the “VIA ROUTE CLEARANCE” until it is loaded
    - III. This is not a “direct” to the CLEARED TO waypoint. It is a clearance to the waypoint via the route specified
  - c) CLEARED (route clearance)
    - I. Instruction to proceed via the specified route
    - II. This uplink may not show the “ROUTE CLEARANCE” until it is loaded

- d) AT (position) CLEARED (route clearance)
- I. Instruction to proceed from the specified position via the specified route
  - II. This uplink may not show the “ROUTE CLEARANCE” until it is loaded

➤ Must contact the domestic ATS Unit on the frequency provided *before* exiting oceanic airspace.

### Common Pre-Defined Freertext CPDLC Uplink Messages

| CPDLC Pre-Defined Uplink Text                                                                                                                             | Reason ATS Unit would uplink                                                                                                     | Crew Action                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DIVERGENCE FROM ATC ROUTE AFTER NEXT WAYPOINT IS DETECTED. CHECK FMS                                                                                      | Out of conformance of NEXT+1 waypoint contained within ADS-C report.                                                             | Check loaded routing, and confirm if any changes have been made.                                                                                                                                                                                                                      |
| YOUR POSITION REPORT INDICATES INCORRECT ROUTING. CHECK FULL DEGREES AND MINUTES LOADED INTO FMC.                                                         | Out of conformance contained within ADS-C report.                                                                                | Check full degrees and minutes loaded to ensure no half or whole degree latitude errors, and report deviations from route to ATC immediately.<br><br>Immediately display the full DEGREES and MINUTES loaded into the FMC for the NEXT waypoint and verify against the cleared route. |
| CONFIRM ASSIGNED ROUTE DOWNLINK OUT OF CONFORMANCE.                                                                                                       | Route contained within 'CONFIRM ASSIGNED ROUTE' downlink out of conformance.                                                     |                                                                                                                                                                                                                                                                                       |
| CHECK FMS AND CORRECT ACTIVE WAYPOINT                                                                                                                     | Incorrect Sequence (after Weather Dev, the ADS track is moving backward)                                                         |                                                                                                                                                                                                                                                                                       |
| ADS-C DEVIATION DETECTED. VERIFY AND ADVISE.                                                                                                              | ADS-C Present Position is off-route                                                                                              | Confirm latest estimate for next Waypoint to ATS Unit                                                                                                                                                                                                                                 |
| ADS-C ESTIMATES APPEAR INACCURATE. CHECK FMS                                                                                                              | Estimate for next waypoint contained in ADS differs from ATS Unit estimate                                                       |                                                                                                                                                                                                                                                                                       |
| CONFIRM ASSIGNED ROUTE                                                                                                                                    | Request to confirm assigned route                                                                                                | Respond to the uplink.<br>If an anomaly occurs that prevents the pilot from responding, send free text UNABLE TO SEND ROUTE                                                                                                                                                           |
| DATA LINK SERVICES WILL BE TERMINATED WHEN LEAVING SATELLITE COVERAGE AT 82N. AT AND NORTH OF 82N USE VOICE FOR POSITION REPORTS AND OTHER COMMUNICATIONS | Northbound aircraft (not equipped with Iridium SATCOM data link) estimated to exit data link coverage area at 82° degrees North. | Resume voice communications including position reporting at and north of 82° degrees North.                                                                                                                                                                                           |

### Contingency Procedures

1. Advise ATC immediately of any data link issues that might affect FANS (CPDLC/ADS-C) data link operations.

–END–



# NAT OPS BULLETIN

Serial Number: **2017-002\_Revision 09**<sup>1</sup>  
Subject: OESB – Oceanic Errors  
Originator: NAT SOG

Issued: **09 October 2025**  
Effective: **09 October 2025**

The purpose of North Atlantic Operations Bulletin **2017-002\_Revision 09** is to promulgate the Oceanic Errors Safety Bulletin (OESB).

***Any queries about the content of the attached document should be addressed to:  
ICAO EUR/NAT Office: [icaoeurnat@icao.int](mailto:icaoeurnat@icao.int)***

---

<sup>1</sup> This NAT OPS Bulletin supersedes Serial Number: 2017-002 Revision 08.

## **NOTICE**

NAT Ops Bulletins are used to distribute information on behalf of the North Atlantic Systems Planning Group (NAT SPG). The material contained therein may be developed within the working structure of the NAT SPG or be third party documents posted at the request of a NAT SPG Member State. A printed or electronic copy of this Bulletin, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. The information published by ICAO in this document is made available without warranty of any kind; the Organization accepts no responsibility or liability whether direct or indirect, as to the currency, accuracy or quality of the information, nor for any consequence of its use. The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

This OESB is intended for distribution to industry and training centers. The OESB will also be posted on various websites to enable broad distribution and rapid updates. In addition, the OESB should be used in conjunction with the guidance detailed in the current edition of North Atlantic Operations and Airspace Manual. This manual can be found at <https://www.icao.int/EURNAT> under: "EUR/NAT Documents >NAT Documents >NAT Documents > NAT Doc 007." Operators should consult <https://www.icao.int/EURNAT> for the most current version of the OESB under "EUR/NAT Documents > NAT Documents > NAT OPS Bulletins." A **sample oceanic checklist** has been developed using many of the recommendations found in this OESB and can be downloaded via the same links. The OESB is promulgated by the NAT Safety Oversight Group (NAT SOG). Questions or comments regarding this Bulletin may be directed to The European and North Atlantic Office of ICAO: [icaoeurnat@icao.int](mailto:icaoeurnat@icao.int).

The NAT OPS Bulletin Checklist is available at <https://www.icao.int/EURNAT>, NAT Documents, then NAT Ops Bulletins.

There is no objection to the reproduction of extracts of information contained in this Bulletin if the source is acknowledged.



# Safety Snapshot

The OESB is intended to help air operators transiting North Atlantic oceanic airspace avoid making commonly observed operational errors. Included are measures to prevent [lateral deviations](#), Gross Navigation Errors (GNEs) (lateral deviations of 10 NM or more), [Large Height Deviations](#) (LHDs) (300 feet or more) and [Erosion of Longitudinal Separation](#). The following recommendations, resources, and tips may be useful in preventing these errors and should be addressed in initial and recurrent ground training. The Sample Oceanic Checklist (found in [NAT Doc 007](#)) and the Global Operational Data Link (GOLD) Manual ([ICAO Doc 10037](#)) are both excellent references for oceanic flying. Additional recommendations address [General](#) considerations when operating in the North Atlantic, [Flight Planning](#), and [SLOP](#).

## Revision History

| Serial Number/Revision: | Effective Date:  | Serial Number/Revision: | Effective Date:   |
|-------------------------|------------------|-------------------------|-------------------|
| 2017-002                | 27 January 2017  | 2017-002_Rev5           | 9 January 2023    |
| 2017-002_Rev1           | 07 December 2017 | 2017-002_Rev6           | 18 September 2023 |
| 2017-002_Rev2           | 07 January 2020  | 2017-002_Rev7           | 8 March 2024      |
| 2017-002_Rev3           | 29 January 2021  | 2017-002_Rev8           | 19 Jun 2024       |
| 2017-002_Rev4           | 05 October 2021  | 2017-002_Rev9           | 09 October 2025   |

## Important Safety Concerns

- **ATTENTION** – Oceanic clearances are no longer issued in response to an RCL with the exception of Shanwick. There will be no clearance delivered via the former ACARS method (except Shanwick OCA). There is no guarantee that you will receive the altitude requested in your RCL. Continue on your last received ATC clearance unless ATC provides you with a new clearance by either voice or CPDLC.
- **ATTENTION** – A CPDLC CLEARED TO (position) VIA ROUTE CLEARANCE message is not a clearance direct to the (position). The ROUTE CLEARANCE message element indicates that there has been an uplinked route that must be loaded. Some flight decks will only display the ROUTE CLEARANCE element of the message after LOAD is selected. Caution, not all route clearance elements will be displayed until loaded into some FMS.

## Top Tips for Operators

- Request weather deviations early. If ATC clearance cannot be obtained or is denied, advise ATC and execute published [weather deviation procedure](#), changing altitude 300 ft when  $\geq 5$  NM L or R of course.
- Be **familiar** with [Controller Pilot Data Link Communications \(CPDLC\) ROUTE CLEARANCE uplinks and loading](#). Cross-check before WILCO-ing and executing.
- Independently confirm CPDLC climb or descent clearances and cross-check with the other pilot before executing them. A “STANDBY” response may appear on the same screen as the request. Do not mistake this original request for a new clearance. Refer to the [Large Height Deviations](#) section.
- Independently display and verify the full DEGREES and MINUTES (**expanded coordinates**) loaded into the Flight Management System (FMS) for unnamed (Lat/Long) waypoints defining the cleared route. Refer to the [lateral deviations](#) section.
- Review climb and descent clearances carefully: some [conditional clearances](#) start with “MAINTAIN FL XXX,” and then describe the condition. Also, be sure to understand the [meaning of “AT” and “BY”](#).
- Carefully manage the [Master Document](#), especially when there is a route amendment. Many errors involve flying the operator-filed route, rather than the ATC-cleared route.
- Consult NOTAMS and follow flight manual guidance to avoid or mitigate the effects of GNSS radio frequency interference (RFI). When RFI results in degraded clock or navigation performance, advise ATC promptly to allow application of larger separation standards. Refer to [GNSS RFI](#) below.

## LARGE HEIGHT DEVIATIONS

The following considerations can help flight crews avoid large height deviations.

1. The CPDLC message “HIGHER FLIGHT LEVEL MAY BE AVAILABLE IF REQUESTED,” and a “STANDBY” response to a climb request are **not** a clearance to change flight level. Neither is a “REMINDER” for a planned climb or descent. The phrases “expect FLxx,” or “are you able FLxx” are also **not** clearances.
2. ATC must specifically approve each flight level change. A filed flight plan with a requested change in flight level (step climb) **is not** a clearance to initiate the change in altitude.
3. Oceanic clearances are no longer issued in response to an RCL with the exception of Shanwick. There will be no clearance delivered via the former ACARS method (except Shanwick OCA). There is no guarantee that you will receive the altitude requested in your RCL. Continue on your last received ATC clearance unless ATC provides you with a new clearance by either voice or CPDLC.
4. Conditional clearances, especially climb clearances with delayed execution, are associated with a disproportionately high error rate. A conditional clearance is an ATC clearance given to an aircraft with certain conditions or restrictions such as changing a flight level based on a UTC time or a specific geographic position. The following is an example of a conditional clearance given via voice to a crew:

*Maintain FL330. After passing 20W, climb to FL350. Cross 25W level. Report reaching FL350.*

**NOTE** – in this example, FL330 is the present FL.

The “conditional” parts of this clearance are that after 20W, the aircraft should start the climb to FL350, and prior to 25W should reach that level.

5. In oceanic, non-surveillance airspace, crews must report when vacating any previously assigned altitude or flight level and when reaching the newly assigned altitude or a flight level (for ADS-C/CPDLC aircraft, these reports are only required when ATC specifically requests them).
6. Crews must know when a climb or descent should be initiated or completed. Conditional clearances usually use the prepositions “by” or “at.”

- a. “BY” means:
- i. “Before passing” when referring to a position, or
  - ii. “Not later than” when referring to a time.
- b. “AT” means:
- i. “After passing” when referring to a position, or
  - ii. “Not before” when referring to a time.

**NOTE:** The following are examples of conditions or restrictions given to crews when the terms AT or BY are used in a conditional clearance.

| Examples: Restriction                                                                                                                                                                                                                                                                           | What is Expected                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CPDLC</b><br/>CLIMB TO REACH FL390 BY 1325<br/>REPORT LEVEL FL390</p> <p><b>VOICE</b><br/>CLIMB TO REACH FLIGHT LEVEL 390 AT OR BEFORE 1325<br/>REPORT LEAVING/REACHING</p>                                                                                                               | <p><b>Arrange the climb so that the aircraft is at FL390 at or before 1325 UTC.</b><br/>If it will not be possible to be level at FL390 at or before 1325 UTC, then:<br/><b>CPDLC:</b> Select “REJECT/UNABLE” and do not climb.<br/><b>VOICE:</b> Advise ATC “unable” with a short explanation and do not commence climb.</p>                                                |
| <p><b>CPDLC</b><br/>DESCEND TO REACH FL320 BY 63N030W<br/>REPORT LEVEL FL320</p> <p><b>VOICE</b><br/>DESCEND TO REACH FLIGHT LEVEL 320 BEFORE PASSING 63 NORTH 030 WEST<br/>REPORT LEAVING/REACHING</p>                                                                                         | <p><b>Arrange the descent so that the aircraft is at FL320 before it crosses 63 North 30 West.</b><br/>If it will not be possible to be level before crossing 63 North 30 West, then:<br/><b>CPDLC:</b> Select “REJECT/UNABLE” and do not descend.<br/><b>VOICE:</b> Advise ATC “unable” with a short explanation and do not commence descent.</p>                           |
| <p>(In this example the aircraft is initially at FL350)</p> <p><b>CPDLC</b><br/>MAINTAIN FL350<br/>AT 1403 DESCEND TO AND MAINTAIN FL330<br/>REPORT LEVEL FL330</p> <p><b>VOICE</b><br/>AT OR AFTER TIME 1403 DESCEND TO AND MAINTAIN FLIGHT LEVEL 330<br/>REPORT LEAVING/REACHING</p>          | <p><b>The aircraft shall maintain FL350 until time 1403 UTC. At or after time 1403 UTC, commence a descent to FL330 and then maintain FL330.</b><br/>If it will not be possible to meet this restriction, then:<br/><b>CPDLC:</b> Select “REJECT/UNABLE” and do not descend.<br/><b>VOICE:</b> Advise ATC “unable” with a short explanation and do not commence descent.</p> |
| <p>(In this example the aircraft is initially at FL350)</p> <p><b>CPDLC</b><br/>MAINTAIN FL350<br/>AT 58N040W CLIMB TO AND MAINTAIN FL360<br/>REPORT LEVEL FL360</p> <p><b>VOICE</b><br/>AFTER PASSING 58 NORTH 040 WEST CLIMB TO AND MAINTAIN FLIGHT LEVEL 360<br/>REPORT LEAVING/REACHING</p> | <p><b>The aircraft shall maintain FL350 until passing 58N040W. After passing 58N040W commence a climb to FL360, and then maintain FL360.</b><br/>If it will not be possible to meet this restriction, then:<br/><b>CPDLC:</b> Select “REJECT/UNABLE” and do not climb.<br/><b>VOICE:</b> Advise ATC “unable” with a short explanation and do not commence climb.</p>         |

7. Be diligent in reviewing aircraft climb and cruise capability to avoid either requesting or accepting clearance to flight levels outside of the aircraft performance envelope.

**NOTE:** Crews must carefully consider the significant temperature inversions that can occur over the Atlantic Ocean. This is particularly important with aircraft operating near maximum gross weight and when requesting flight levels approaching oceanic entry points. Crews should have an Operational Flight Plan (OFP) that reflects the actual aircraft weight. An accurate OFP will include a more realistic altitude profile. Failure to attain flight levels as assigned can result in a loss of planned separation between aircraft. In addition, making a last-minute request for a lower flight level and/or amended routing can create unnecessary challenges for ATC, and should be avoided if possible.

8. If a crew finds itself at a flight level that becomes unsustainable due to degrading performance (e.g., when encountering low temperatures affecting fuel, or high temperatures affecting aerodynamics), it is imperative to coordinate a flight level change with ATC as soon as possible. If a climb or descent must be made without ATC clearance, applying the 5 NM lateral offset contingency procedure (as referenced below) will mitigate some of the risk. Crews should then diligently work to obtain an ATC clearance.
9. Be alert for situations when ATC issues clearances that have only a latitude OR a longitude (e.g., “at/after passing 30W”) rather than a latitude AND a longitude. Crews must clearly understand when they are to make a flight level change.
10. Crews must ensure they are executing the correct contingency procedure in case of lost communications. The NAT radio communications failure procedure published in the NAT section of ICAO Doc 7030 requires maintaining the last assigned flight level (Note: this NAT regional procedure differs from that published in ICAO Annex 2). ATC approval is required for all flight level changes.

## LATERAL DEVIATIONS

The following considerations can help flight crews avoid lateral deviations.

1. Fly the ATC cleared route – **which may differ from the filed flight plan.**
2. A route amendment [issued via ACARS (ATC/ROUTE AMENDMENT), Voice, or CPDLC] is often a contributing factor to navigational errors. Crews must ensure they correctly copy the route amendment, reprogram (and execute) the FMS /navigation systems, update the Master Document and update the plotting chart. For CPDLC Route Uplinks, refer to the [CPDLC](#) section. The FMS route verification should include track and distance checks on legs with new waypoints in the amended route.
3. Crews must fly any route amendment (and not the filed flight plan). The crew should ensure that details of the route amendment are recorded on the Master Document, and that all crew members are aware of any changes. A disciplined and detailed changeover briefing with reference to the Master Document is vital whenever relief pilots take their flight station seats.

### NOTES:

1. [NAT Doc 007](#), Chapter 6, contains guidance on use of a Master Document.
2. Track and distance tables are available commercially for every ten degrees of longitude. Alternatively, it may be possible to obtain (from dispatch) or create (using an Electronic Flight Bag application) an updated operational flight plan, to verify new tracks and distances in the FMS.

4. For route amendments that change the oceanic exit point, crews must obtain domestic routing from ATC. ATC normally expects flights to re-join the flight plan route at the waypoint that immediately follows the original oceanic exit point.
5. Pre-flight route verification of the navigation system should include track and distance checks between oceanic waypoints. Enroute procedures should also include track and distance checks prior to reaching an oceanic waypoint.

6. The crosscheck of the FMS oceanic coordinates should include comparing the DEGREES **and** MINUTES (expanded coordinates) for the next and subsequent (“next +1”) waypoints against the cleared route, to detect and resolve waypoint insertion errors. Crews should fully understand how to enter waypoints using full latitude and longitude, and/or using the ARINC 424 paragraph 7.2.5 naming convention (e.g., 5850N = N58°/W050° and H5850 = N58°**30**’/W050°).
7. Crews must understand FMS display behavior with the chosen entry method, and that waypoints may have truncated minutes (e.g., N58°/W050° or N58°**30**’/W050° loaded, “**N58W050**” displayed), and/or generic display names (e.g., N58°30’/W050° loaded, “WPT01” displayed).

**NOTE:** *In NAT airspace where unnamed, half-degree of latitude waypoints are used, waypoint display labels can be misleading (minutes can be truncated or rounded) and/or the FMC can create a generic label). It is imperative that crews check the full DEGREES **and** MINUTES (expanded coordinates) of all oceanic waypoints. Custom waypoints in aircraft navigation databases for half-degree of latitude points should use the “Hxxyy” format as introduced in Supplement 23 to ARINC 424 paragraph 7.2.5. See [NAT OPS Bulletin 2018-003](#), “Waypoint Insertion/Verification Special Emphasis Items.”*

8. It is discouraged to add “pseudo-waypoints” to the active route, e.g., to depict Equal Time Points (ETPs), or “abeam points,” even if along the route. Pseudo-waypoints hinder ground automation out-of-conformance monitoring and ATC’s ability to alert pilots of incorrectly programmed FMS waypoints. A clean active route ensures ATC’s ability to intervene in a timely manner.
9. It is strongly recommended that a plotting/orientation chart, either hard-copy or via an Electronic Flight Bag application, be used and procedures include a position check 10 minutes after each waypoint. Compare all waypoints on the chart against the Master Document.
10. Operator flight crew procedures should focus on verifying the clearance and the route of flight while also promoting an attitude of “healthy suspicion” through independent crosschecks to verify that the clearance is correctly programmed. These procedures must also be used with any route amendments.
11. There should only be one Master Document on the flight deck. It should be labeled “Master” and should always reflect the current cleared route of flight.
12. Be alert for similar sounding named oceanic waypoints (e.g. PITAX versus BERUX). Also, crews should note that oceanic tracks often contain two subsequent named waypoints (e.g., DOGAL BEXIT).
13. Given the ATC coordination necessary when transiting FIR boundaries, pilots must give controllers adequate lead time when making requests for track deviations or altitude changes, especially in areas where multiple FIRs (e.g., Brest, Madrid, and Shanwick) are in close proximity. ATC coordination in such areas can become quite complex.

## EROSION OF LONGITUDINAL SEPARATION

The following considerations can help flight crews avoid erosion of longitudinal separation.

1. When providing position reports via voice, crews must revise their estimate with ATC if a previously reported estimate is found to be in error by 3 minutes or more (see [Annex 2](#) and [ICAO Doc 7030](#)). Accurate position reports are essential to procedural air traffic control.

**NOTE:** *Time restrictions issued by ATC must be strictly adhered to. A restriction is issued to ensure required spacing between two aircraft.*

2. Crews must adhere to any assigned (True) Mach. Operators selecting “Long Range Cruise” or “ECON” modes are in fact flying variable Mach. As needed, crews can request speed adjustments or to “RESUME NORMAL SPEED” with ATC.

**NOTE:** In the NAT, an ATC instruction to "RESUME NORMAL SPEED" allows crews to fly other than a fixed speed (Mach) assignment, but still requires crews to notify ATC if the speed changes by plus or minus Mach .02 or more. Operators can find details in [NAT Doc 007](#).

3. Ensure that the aircraft master clock (typically the FMS) is set to UTC and is used for all ETAs and ATAs. Where possible, clocks should be in GNSS-synchronized mode.

## CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)<sup>2</sup>

The following considerations can help flight crews avoid deviations associated with CPDLC.

1. Be familiar with proper responses for CPDLC messages, especially ones used frequently in the NAT, such as:
  - a. "CLEARED TO {position} VIA ROUTE CLEARANCE" or "CLEARED ROUTE CLEARANCE."
    - i. These are **not** "Cleared Direct," or "Cleared as Filed." The "Route Clearance" phrase signifies there is an uplinked route that needs to be loaded, including intermediate waypoints.
    - ii. Some flight decks display the ROUTE CLEARANCE (uplinked waypoints) only when "LOAD" is selected. Once LOAD is selected and the crew confirms it loads properly and is acceptable, they should select "ACCEPT/WILCO" followed by "EXECUTE/INSERT" to activate the amended route in the FMS. It is vital to understand the menu hierarchy and how to load CPDLC clearances.
  - b. "CONFIRM ASSIGNED ROUTE." Ensure the entire oceanic route is loaded in the FMS before responding to this message. When available, use the automated response, not free-text.

**NOTE:** Some aircraft/FMS combinations are experiencing a sporadic anomaly where the "SEND" prompt for down-linking a standard response to the "CONFIRM ASSIGNED ROUTE" is not displayed on the FMS.

2. Be careful not to mistake a "REMINDER" for an ATC clearance. Such reminders can appear on some avionics displays, e.g., for a planned climb, but are themselves **not** ATC clearances.
3. Conditional clearances sent via CPDLC require special attention. See examples in the section above addressing [Large Height Deviations](#). The following is a typical scenario where a CPDLC "future execution" conditional clearance is misapplied.

*At approximately 1133Z the following CPDLC message was sent to the flight:*

MAINTAIN FL370  
AT 1205 CLIMB TO AND MAINTAIN FL390  
CLIMB TO REACH FL390 BY 1215  
REPORT LEVEL FL390

The controller received the expected WILCO response. At approximately 1134Z, the controller received a Level Range Deviation Event ADS-C notification, indicating a climb inconsistent with the clearance. Shortly thereafter, the controller received a "LEVEL FL390" message.

The pilots in this scenario violated their ATC clearance because they began their climb before 1205Z.

4. When receiving a CPDLC uplink message, it is important for both pilots to independently and silently read the message, and then verify with each other correct understanding of the clearance (including the uplink time stamp). **Use the CPDLC load prompt** to load the CPDLC route clearance into the FMS before executing, and then WILCO the clearance.

<sup>2</sup> Guidance for CPDLC communications can be found in the Global Operational Data Link Manual (GOLD, ICAO Doc 10037).

5. It is important to note that on some aircraft displays, the CPDLC uplink message may be more than one page long (requires “paging” through the display). Review the entire message carefully before taking any action. Flight crews may choose to print the message, but should be aware that printouts can depict uplinks differently than as shown on the appropriate flight deck display.

**NOTES:**

1. Page acknowledgements may be unique to the avionics installed in a particular aircraft. For example, on some installations, crews cannot ACCEPT/WILCO until the last page of a message is reviewed, while in other installations, ACCEPT/WILCO may be allowed on the first page.

2. When printed, the CPDLC message may not be an exact copy of the displayed CPDLC message.

6. Resolve any questions about the clearance before initiating any action. If crews do not fully understand the CPDLC clearance, or the clearance is unexpected, such as a flight level change without having requested one, they should revert to voice communication and query ATC.
7. Review the time stamp of CPDLC messages to ensure they are not old (delayed).
8. Dialogues with ATC that are initiated with CPDLC should be completed using CPDLC and dialogues begun with voice should be completed by voice. Crews should strive not to mix the two media.
9. Avoid using free-text messages when standard messages are available and appropriate. Free-text messages are not machine-read, which can complicate processing of information. For example, when receiving the CPDLC uplink “CONFIRM ASSIGNED ROUTE,” crews should follow CPDLC menu prompts to send the active route. A free-text reply would defeat automated conformance checking.

**NOTE:** Follow flight manual procedures, which specifically describe how to send standard message (non free-text) replies to CPDLC uplinks.

10. Be sure that HF SELCAL is working even when CPDLC is functioning properly – do a SELCAL check at oceanic entry and at each Oceanic Control Area (OCA) boundary.

## CONTINGENCIES

The following considerations can help flight crews avoid deviations associated with in-flight contingency procedures. Crews should always operate in accordance with their issued ATC clearance. However, if the situation dictates deviating and a clearance cannot be obtained, contingency procedures are available.

1. Crews are reminded that contingency procedures include establishing a 5 NM lateral offset **before changing altitude**. Weather deviation procedures involve using a vertical displacement of +/- 300 feet after establishing at least a 5 NM offset from the cleared track. These global procedures are published in [NAT Doc 007](#), Chapter 10, and in Chapter 15 of *Procedures for Air Navigation – Air Traffic Management* (PANS-ATM, Doc 4444).
2. It is important for pilots to understand that the contingency procedures should only be flown **when an ATC clearance cannot be obtained**. Inform ATC as soon as practicable of intentions and obtain a clearance.
3. It is also important that pilots understand that when an ATC clearance to deviate for weather is issued, it should be done at the ATC-assigned altitude, without any vertical displacement.
4. Also, if ATC clears a pilot to deviate for weather and instructs the pilot to “REPORT BACK ON ROUTE,” do not make this report until re-established on the original routing. Once a flight reports back on route, their weather deviation clearance is no longer active. Alternatively, the pilot could request new, direct routing, which if approved would supersede the “REPORT BACK ON ROUTE” instruction.

**NOTE:** Even for weather deviations, less than 5 NM, the pilot must first request clearance from ATC. However, if ATC clearance cannot be obtained and a deviation becomes necessary, pilots must follow published ICAO Weather Deviation Procedures described above.

## GENERAL

The following general considerations can help flight crews avoid deviations in oceanic airspace.

1. Both pilots checking the clearance MUST be standard flight deck procedure. Avoid physiological breaks or any distractions when near the oceanic boundary or when copying and reprogramming route amendments. Any route amendments must be communicated clearly in crew changeover briefings.
2. All HF voice oceanic communications go through a radio operator. The radio operator is not an air traffic controller. Radio operators must relay all reports and requests to ATC for approval and processing. The pilot read-back to the radio operator MUST be verbatim.
3. Relays of ATC instructions between aircraft MUST be accurate. Ensure a correct read-back is received from every communication link in the relay.
4. Always read the route loaded in the FMS first and then compare it to the Master Document. This mitigates against “expectation bias,” where pilots see what they expect to see.
5. Immediately clarify with ATC any confusion about the clearance.
6. ADS-C and satellite-based ADS-B provide near real-time flight trajectory information to ATC. Any uncleared deviations outside SLOP parameters (i.e., deviations any distance left of centerline, or greater than 2 NM right of the route centerline) trigger out-of-conformance alerts to the controller and may result in a reporting action.
7. Consult NOTAMS and follow flight manual guidance to avoid or mitigate the effects of GNSS RFI. Notify ATC per [NAT Doc 007](#) and [NAT OPS Bulletin 2025-001](#), *NAT GNSS Interference Procedures* as early as possible.

## FLIGHT PLANNING

The following flight planning considerations can help flight crews avoid deviations in oceanic airspace.

1. Pilots and dispatchers should use all available resources to plan a route that avoids adverse meteorological phenomena (e.g., turbulence, volcanic ash, non-standard temperatures, convective activity, and weather at alternates). In addition, pilots should be knowledgeable about information on operational flight plans and do basic crosschecks of fuel, winds, and groundspeeds.
2. Dispatchers and flight planners should make every effort to file routes that ATC will not need to amend, in accordance with Chapter 4 of [NAT Doc 007](#). Named oceanic points, particularly at 15W and 10W, are frequently omitted from the flight plan when they should be included, or vice versa, either of which may cause ATC to amend the route.

**NOTE:** Shanwick publishes “Oceanic Tracks - Westbound Traffic Brief” on its website (<https://www.customer.nats.co.uk/shanwick/>, requires login) daily at approximately 8:30 AM London time. Crews not filing the preferred altitudes are more likely to receive an amended clearance.

3. Dispatchers, flight followers, flight operations officers, flight planners and crews should ensure that items 10 and 18 of the ATC flight plan (normally reproduced on the operational flight plan) correctly reflect capabilities and authorizations. ATC uses these codes to apply separation standards.
4. When filing new flight plans, dispatchers should ensure that the old ones are cancelled. Having multiple flight plans in flight data systems can create confusion, system errors, and lead to deviations from the ATC expected route.

## STRATEGIC LATERAL OFFSET PROCEDURES (SLOP)

(Only RIGHT offsets are authorized)

The NAT strongly encourages the use of SLOP. An LHD that occurred in November 2024 created a hazard that was mitigated by SLOP. A crew mistakenly believed they were cleared to FL 340. When that aircraft leveled off, it was **abeam** same-direction, conflicting traffic, **also at FL 340**, which fortunately was flying SLOP, 2 NM right of centreline.

The following SLOP considerations can help flight crews avoid associated deviations in oceanic airspace.

1. Use SLOP in all oceanic airspace. SLOP should be standard procedure, not a contingency, and operators should endorse using lateral offsets for safety reasons on all oceanic flights, to reduce the risk of collision and to avoid wake turbulence.

**NOTE 1:** SLOP should also be used on random routes due to the high traffic density and limitations of aids such as TCAS/ACAS.

**NOTE 2:** SLOP offsets in 0.1 NM increments, up to 2 NM right of centerline, are authorized in the NAT, in accordance with Doc 4444 provisions. Consult the applicable State AIP for further details.

2. The objective of SLOP is to reduce the risk of collision by randomly distributing flights across any of the offset positions. Operators should clearly communicate this concept in flight crew Standard Operating Procedures. In a bi-directional environment, maintaining centerline incurs more risk than offsetting.
3. Pilots may apply an offset outbound at the oceanic entry point and must return to centerline before the oceanic exit point unless otherwise authorized by the appropriate ATS authority or directed by the appropriate ATC unit.
4. Offsets to the left of centerline are NOT authorized under SLOP.
5. Use sound management of automated flight guidance systems when establishing offsets, i.e., avoid using “HDG” mode due to the risk associated with neglecting to arm “LNAV/NAV” mode.
6. Make sure the “TO” waypoint is correct after entering SLOP. With some avionics, when executing an offset near the active “TO” waypoint, the FMS can sequence to the “next + 1” waypoint—skipping a point.
7. Guidance on SLOP is available in the video found at this link: <https://www.youtube.com/watch?v=-rigf7UngN0>.

- END -