

NAT Doc 007, v2021-2 - marked up pages showing changes as follows:

- sections 1.8.3 to 1.8.5 data link requirements – updated with information from discontinued NAT OPS Bulletin 2017_001 [NAT common DLM AIC–Rev4];
- section 1.10.1 to 1.10.2 PBCS operations – updated;
- section 1.10.5 PBCS operations – new text regarding the uplink message latency monitor function;
- section 8.2.15 service applied in Gander and Shanwick airspace for provision of climbs – updated with information from discontinued NAT OPS Bulletin 2013_005 [New Service Notification for Gander Oceanic Control Area];
- section 8.5.20 to 8.5.22 Uplink Message Latency Monitor Function – updated with information from discontinued NAT OPS Bulletin 2018_002 [CPDLC Uplink Message Latency Monitor Function–Rev1];
- section 13.4 Weather Deviation Procedures – new Figure 13-2 Visual aid for understanding and applying the weather contingency procedures guidance;
- Attachment 8 Charts for ATS surveillance coverage in NAT – updated with information from discontinued NAT OPS Bulletin 2017_001 NAT common DLM AIC Rev4;
- Attachment 10 Checklist for dispatchers, under Mandatory ADS-B Carriage, Northern Boundary coordinates corrected; and
- ICAO EUR/NAT email address and public website url updated whenever mentioned in document.

NAT Doc 007

NORTH ATLANTIC OPERATIONS AND AIRSPACE MANUAL

~~***V.2021-1 (Applicable from February 2021)***~~ ***V.2021-2***
(Applicable from July 2021)

*Prepared by the ICAO European and North Atlantic Office
on behalf of the North Atlantic Systems Planning Group (NAT SPG)*

EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO**International Civil Aviation Organization (ICAO)**

European and North Atlantic (EUR/NAT) Office

3 bis, Villa Emile Bergerat

92522, Neuilly-sur-Seine CEDEX

FRANCE

e-mail : icaoeurnat@paris-icao.int
Tel : +33 1 46 41 85 85
Fax : +33 1 46 41 85 00
Web : <http://www.icao.int/EURNAT/>

The bulk of this Document provides information for Aircraft Operating Agencies, flight crews and Dispatchers planning and conducting operations in or above the NAT HLA and it also offers guidance to the State Regulators responsible for the approval/certification/or licensing of such aircraft operators, flight crews or dispatchers. It combines the guidance material contained prior to 2010 separately in the “North Atlantic MNPS Airspace Operations Manual”, and the ICAO “Guidance Material for Air Navigation in the North Atlantic Region.

Aircraft without NAT HLA or RVSM approvals may, of course, also fly across the North Atlantic below FL285. However, due consideration should be given to the particular operating environment. Especially by pilots/operators of single and twin engine aircraft. Weather conditions can be harsh; there are limited VHF radio communications and ground-based navigation aids; and the terrain can be rugged and sparsely populated. International General Aviation (IGA) flights at these lower levels constitute a very small percentage of the overall NAT traffic but they account for the vast majority of Search and Rescue operations. Specific guidance for the pilots and operators of such flights was previously contained in the North Atlantic International General Aviation (NAT IGA) Operations Manual published by the FAA on behalf of the ICAO North Atlantic Systems Planning Group (NAT SPG). However, with effect from Edition 2013, such guidance has been subsumed into this document.

The resulting consolidated guidance document provided herewith is included in the ICAO NAT Regional Library and is designated as NAT Document 007 (NAT Doc 007). The Document can be accessed/downloaded from the [European and North Atlantic \(EUR/NAT\) Office public pages on the ICAO website](#), following “[EUR & NAT Documents](#)”, then “[NAT Documents](#)”, in folder “[NAT Doc 007](#)”.

This website will also include, any noted post publication errata (changes) or addenda (additions) to the current edition.

A separate document, “NAT Region Updates Bulletin”, is also available from the website. This advises operators of any recent changes to procedures or associated operational information which may affect their conduct and planning of operations in the ICAO North Atlantic (NAT) region.

Edited by

European and North Atlantic Office of ICAO
3 bis, Villa Emile Bergerat
92522 Neuilly-sur-Seine Cedex
FRANCE

Tel: +33 1 4641 8585

Fax: +33 1 4641 8500

Email: ~~icaeournat@paris.icao.int~~ icaeournat@icao.int

To assist with the editing of this Manual and to ensure the currency and accuracy of future editions it would be appreciated if readers would submit their comments/suggestions for possible amendments/additions, to the ICAO EUR/NAT Office at the above Email address.

In October 2012 UK NATS completed a publication titled ‘Track Wise-Targeting Risk within the Shanwick OCA’. It was produced in collaboration with the Safety Partnership Agreement. It is available as a DVD or can be viewed on-line via You-Tube. Like this Manual, it is aimed at flight crews, dispatchers and others concerned in flight operations in the North Atlantic. It follows the progress of a westbound NAT flight through the Shanwick OCA as well as exemplifying contingency and emergencies situations. While the operational procedures elements are specific to Shanwick, the majority of the DVD considers issues common to the whole ICAO NAT region. It is available at no charge to bona fide operators on application to: customerhelp@nats.co.uk.

The complete DVD can be accessed from the European and North Atlantic (EUR/NAT) Office public pages on the ICAO website (www.icao.int/EURNAT/), following “[EUR & NAT Documents](#)”, then “[NAT Documents](#)”, then selecting “Trackwise for on-line U-Tube viewing”. It is also available on [YouTube™](#), looking for “**Trackwise - Targeting Risk Within The Shanwick OCA**”, or directly at <https://www.youtube.com/watch?v=EJTjwW5ZYas>

EXPLANATION OF CHANGES

Edition 2020-v1 - Content Modifications/Additions Incorporated

This modification includes changes to Foreword, Definitions, *paragraphs 1.5, 1.8, 1.11, 2.2, 3.2, 3.4, 4.1, 6.1, 6.8, 8.5, 10.1, 10.2, 10.3, 13.4 and 16.2 and Attachment 6, Attachment 10.*

Edition 2020-v2 - Content Modifications/Additions Incorporated

This modification includes changes to sections 3.2.1.b and 6.8.1 concerning operation of transponders and HLA approvals in the Shanwick OCA South East Corner.

2020-v2.1: Section 10.2.1 Note 2: Correction of waypoint name, LASNO replaced by GELPO.

Edition 2021-v1 - Content Modifications/Additions Incorporated

This modification includes changes to:

- sections 3.2.1.a), Figure 3-1, 4.2.11, 16.3.10, 16.6.6, 7.1.1, 7.3.1 concerning removal of HO NDB, NOROTS and NCA and deletion of “turbojet” in PANS- ATM with reference to Mach number technique; and
- sections 4.2.12, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.1.5, 6.1.27, 6.1.28, 6.1.31, 6.6.17, 16.2.5, 16.6.16, 16.6.19 concerning clarifications on the NAT Region HF requirements.

Edition 2021-v2 - Content Modifications/Additions Incorporated

This modification includes changes to:

- sections 1.8.3 to 1.8.5 data link requirements – updated with information from discontinued NAT OPS Bulletin 2017_001/NAT common DLM AIC – Revision 4;
- section 1.10.1 to 1.10.2 PBCS operations – updated;
- section 1.10.5 PBCS operations – new text regarding the uplink message latency monitor function;
- section 8.2.15 service applied in Gander and Shanwick airspace for provision of climbs – updated with information from discontinued NAT OPS Bulletin 2013_005 [New Service Notification for Gander Oceanic Control Area];
- section 8.5.20 to 8.5.22 Uplink Message Latency Monitor Function – updated with information from discontinued NAT OPS Bulletin 2018_002 [CPDLC Uplink Message Latency Monitor Function – Revision 1];
- section 13.4 Weather Deviation Procedures – new Figure 13-2 Visual aid for understanding and applying the weather contingency procedures guidance;
- Attachment 8 Charts for ATS surveillance coverage in NAT – updated with information from discontinued NAT OPS Bulletin 2017_001 NAT common DLM AIC – Revision 4;
- Attachment 10 Checklist for dispatchers, under Mandatory ADS-B Carriage, Northern Boundary coordinates corrected; and
- ICAO EUR/NAT email address and public website url updated whenever mentioned in document.

1.7 ATIS SURVEILLANCE SERVICE AREAS IN THE NAT REGION

1.7.1 ATIS Surveillance services (radar, ADS-B and Multilateration) are provided within some portions of the NAT HLA, where radar- and/or ADS-B and/or Multilateration coverage exists. The ATIS Surveillance services are provided in accordance with the ATIS Surveillance services procedures in the PANS ATM (DOC 4444).

1.7.2 All aircraft operating as IFR flights anywhere within the NAT region are required to be equipped with a pressure-altitude reporting SSR transponder and may therefore benefit from such radar and multilateration air traffic services, currently offered in parts of the NAT region.

1.7.3 ADS-B services are provided within portions of the NAT region (see Chapter 10). Eligibility and procedures for ADS-B service in the NAT are based upon the provisions in the Doc 7030 section 5.5.

1.7.4 North Atlantic States providing ADS-B Air Traffic Services maintain a common exclusion list of aircraft that are known to not satisfy the conditions promulgated by Doc 7030. The purpose of the exclusion list is to ensure that ADS-B reports received from such aircraft are not utilized by the air traffic control system for separation services.

1.7.5 Aircraft operators wishing to receive an exemption from the procedures specified in Doc 7030 for an individual flight shall apply for an exemption to the ATIS unit(s) in accordance with AIP directives. Any approvals for such exemptions may be contingent on specific conditions such as routing, flight level and time of day.

1.8 DATA LINK REQUIREMENTS

1.8.1 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.

1.8.2 The DLM is not applicable to aircraft operating in:

- Airspace north of 80° North;
- New York Oceanic East flight information region (FIR);
- Airspace where an ATIS surveillance service is provided by means of radar, multilateration and/or ADS-B, coupled with VHF voice communications as depicted in State Aeronautical Information Publications (AIP), provided the aircraft is suitably equipped (transponder/ADS-B extended squitter transmitter) (see *Note 1* below).

1.8.3 Certain categories of flights may be allowed to plan and operate through the mandated airspace with non-equipped aircraft, namely non-equipped flights that file STS/FFR, HOSP, HUM, MEDEVAC SAR, or STATE in Item 18 of the flight plan. (Depending on the tactical situation at the time of flight, however, such flights may not receive an ATC clearance which fully corresponds to the requested flight profile). (See also “~~NAT OPS Bulletin 2017-001~~” available at www.icao.int/EURNAT/, following “~~EUR & NAT Documents~~”, then “~~NAT Documents~~”, then “~~NAT OPS Bulletins~~”).

1.8.4 Any aircraft not equipped with FANS 1/A (or equivalent) systems may request to climb or descend through the NAT DLM airspace. Such requests, as outlined below, will be considered on a tactical basis.

• Altitude reservation (ALTRV) requests will be considered on a case by case basis (as is done today regarding NAT HLA airspace), irrespective of the equipage status of the participating aircraft.

- If a flight experiences an equipment failure AFTER DEPARTURE which renders the aircraft unable to operate FANS 1/A (or equivalent) CPDLC and/or ADS-C systems, requests to operate in the NAT DLM airspace will be considered on a tactical basis. Such flights must notify ATC of their status PRIOR TO ENTERING the airspace.
- If a FANS 1/A data link equipment failure occurs while the flight is OPERATING WITHIN NAT DLM AIRSPACE, ATC must be immediately advised. Such flights may be re-cleared so as to avoid the airspace, but consideration will be given to allowing the flight to remain in the airspace, based on tactical considerations.
- If a flight experiences an equipment failure PRIOR to departure which renders the aircraft non-DLM compliant, the flight should re-submit a flight plan so as to remain clear of the NAT regional DLM airspace.^[LTI]

~~1.8.3~~ **1.8.5** Charts providing an indication of the likely extent of the NAT ATS Surveillance airspace are included in Attachment 8. Details will be promulgated in the future via State AIP.

Note 1: Details in State Aeronautical Information Publications (AIP).

1.9 PERFORMANCE MONITORING

1.9.1 The horizontal (i.e. latitudinal and longitudinal) and vertical navigation performance of operators within the NAT HLA is monitored on a continual basis. If a deviation is identified, follow-up action after flight is taken, both with the operator and the State of Registry of the aircraft involved, to establish the cause of the deviation and to confirm the approval of the flight to operate in NAT HLA and/or RVSM airspace. The overall navigation performance of all aircraft in the NAT HLA is compared to the standards established for the region, to ensure that the relevant TLSs are being maintained. (See Chapter 11).

1.9.2 A NAT regional monitoring programme to assess actual communication and surveillance performance against RCP and RSP specifications is being undertaken to monitor individual aircraft performance and to determine whether and what, if any, corrective action is required by contributing entities (Operators, ANSPs, CSPs, SSPs, etc.) to ensure achievement of the system performance required for continued PBCS based separation operations.

1.10 PBCS OPERATIONS

1.10.1 ~~On 29 March 2018~~ Performance Based separation minima as low~~small as~~ of 42.6km (23.19~~23.19~~ NM) lateral and~~, 5 minutes and 30/93km (14.50~~ NM) longitudinal predicated on PBCS and PBN, in accordance with ICAO Doc 4444 Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) has been~~were~~ implemented in the ICAO NAT Region. Operators should consult the AIS of relevant NAT Provider States for the detailed application of these separation minima in each of the NAT OCAs. To benefit from these separations Operators must obtain State Approvals in accordance with Annex 6 to file in the flight plan RCP/RSP capabilities including aircraft equipage where RCP and/or RSP specifications are prescribed for the communications and/or surveillance capabilities supporting this ATS provision. Guidance material for implementation of communication and surveillance capability supporting these separation minima is contained in the Performance Based Communication and Surveillance (PBCS) Manual (Doc 9869) and the Global Operational Data Link (GOLD) Manual (Doc 10037).

1.10.2 Within the OTS the 42.6km (23NM) lateral separation minimum is implemented by applying 42.6km (23 NM) lateral spacing through whole and half degrees of latitude between PBCS designated NAT OTS Tracks between flight levels FL 350-390 inclusive, except when the OTS occurs in the New York OCA East. In the OTS this PBCS-based separation implementation supersedes and replaces the previous trials of RLatSM. In addition to requiring RNP-4 Approval, Operators must appreciate that unlike the filing criteria for the half degree spaced RLatSM Tracks, the simple equipage and operation of CPDLC and ADS-C will

not be a sufficient criteria for planning and flying on the designated PBCS-based OTS Tracks. To utilize these tracks the aircraft must have formal State Authorization for filing RCP 240 and RSP180. ~~It should be noted that in recognition that necessary Statements of Compliance from the aircraft/avionics manufacturers nor CSP level of service contracts to support such authorizations may not be immediately available for all aircraft types, a maximum of three PBCS tracks will be published until 28 March 2019 or until the 90% of OTS traffic are filing PBCS designators, whichever occurs first.~~

1.10.3 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

1.10.4 NAT OPS Bulletin 2019_003 provides a list of recommended data link performance improvement options and recommended software versions for NAT data link operations. Aircraft operators are advised to review this OPS Bulletin to identify if some of the issues identified in the Bulletin apply to their operations. The bulletin will be updated on regular basis.

1.10.5 Some NAT ANSPs have implemented the message latency monitor function which is designed to prevent pilots from acting on a CPDLC uplink message that has been delayed in the network. The most serious of such cases would be the pilot executing a clearance that was no longer valid. Because aircraft implementations are varied, it is impossible for ATC to tailor the uplink of the message SET MAX UPLINK DELAY VALUE TO 300 SEC to different aircraft types. It has therefore been decided among the NAT ANSPs to uplink this message to all CPDLC connected aircraft immediately after they enter each control area. An aircraft may therefore receive this message multiple times during a flight. Refer to section 8.5.20 for pilot procedures concerning this function.

Note: When operating in the NAT airspace, aircraft operators can expect a value of 300 seconds for the delayed message parameter which had been agreed by the NAT ANSPs on a trial basis.

1.11 TRIALS AND FUTURE DEVELOPMENTS

1.11.1 The ICAO North Atlantic Systems Planning Group undertakes a continuous programme of monitoring the safety and efficiency of flight operations throughout the NAT region. Plans are thereby developed to ensure the maintenance and further enhancement of the safety and traffic capacity of the airspace. The NAT SPG has produced a document providing a comprehensive overview of expected development of North Atlantic flight operations. This document, "Future ATM Concept of Operations for the North Atlantic Region" (NAT Doc 005) is available at www.icao.int/EURNAT/, following "[EUR & NAT Documents](#)", then "[NAT Documents](#)", in folder "[NAT Doc 005](#)".

1.11.2 Presently such plans include a gradual transition to a PBN system of navigation performance specification. The detailed transition plan is available on the ICAO EUR/NAT website where updates are reflected. In preparation, from January 2015 onward, any new approvals to operate in MNPS airspace have been based on RNP10 or RNP4 navigation specifications and in support, MNPS airspace was redesigned and renamed in February 2016 to NAT High Level Airspace (HLA).

1.11.3 The evolution of MNPS airspace to NAT HLA in conjunction with the Data Link Mandate and the PBN based navigational requirements will improve flight safety allowing for the use of reduced lateral and longitudinal separation standards. This will enhance airspace capacity and provide more fuel efficient profiles for operators.

2.5 EXAMPLES OF DAY-TIME WESTBOUND AND NIGHT-TIME EASTBOUND NAT TRACK MESSAGES AND ASSOCIATED TRACK SYSTEMS

Example 1 — Example of Westbound NAT Track Message

TZA179 082009
FF BIRDZQZZ BIKFYXYX
082009 EGGXZOZX
 (NAT-1/3 TRACKS FLS 310/390 INCLUSIVE
 APR 09/1130Z TO APR 09/1900Z
 PART ONE OF THREE PARTS-
 A ERAKA 60/20 62/30 63/40 63/50 MAXAR
 EAST LVLS NIL
 WEST LVLS 310 320 330 350 360
 EUR RTS WEST ETSOM
 NAR -
 B GOMUP 59/20 61/30 62/40 62/50 PIDSO
 EAST LVLS NIL
 WEST LVLS 310 320 330 350 360 380
 EUR RTS WEST GINGA
 NAR -
 C SUNOT 58/20 60/30 61/40 61/50 SAVRY
 EAST LVLS NIL
 WEST LVLS 310 320 330 340 360 380
 EUR RTS WEST NIL
 NAR -
 END OF PART ONE OF THREE PARTS)

TZA181 082010
FF BIRDZQZZ BIKFYXYX
082009 EGGXZOZX
 (NAT-2/3 TRACKS FLS 310/390 INCLUSIVE
 APR 09/1130Z TO APR 09/1900Z
 PART TWO OF THREE PARTS-
 D PIKIL 57/20 57/30 56/40 54/50 NEEKO
 EAST LVLS NIL
 WEST LVLS 310 320 330 340 350 360 370 380 390
 EUR RTS WEST NIL
 NAR -
 E RESNO 56/20 56/30 55/40 53/50 RIKAL
 EAST LVLS NIL
 WEST LVLS 310 320 330 340 350 360 370 380 390
 EUR RTS WEST NIL

NAR -
 F VENER 5530/20 5530/30 5430/40 5230/50 SAXAN
 EAST LVLS NIL
 WEST LVLS 350 360 370 380 390
 EUR RTS WEST NIL
 NAR -
 G DOGAL 55/20 55/30 54/40 52/50 TUDEP
 EAST LVLS NIL
 WEST LVLS 310 320 330 340 350 360 370 380 390
 EUR RTS WEST NIL
 NAR -
 END OF PART TWO OF THREE PARTS)

TZA182 082010
FF BIRDZQZZ BIKFYXYX
082010 EGGXZOZX
 (NAT-3/3 TRACKS FLS 310/390 INCLUSIVE
 APR 09/1130Z TO APR 09/1900Z
 PART THREE OF THREE PARTS-
 H MALOT 54/20 54/30 53/40 51/50 ALLRY
 EAST LVLS NIL
 WEST LVLS 310 320 330 340 350 360 370 380 390
 EUR RTS WEST NIL
 NAR -
 REMARKS.
 1. TMI IS 099 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 FOR
 LEVELS 350-390 IN NAT AIRSPACE.
 3. PBCS OTS LEVELS 350-390. PBCS TRACKS AS FOLLOWS
 TRACK E
 TRACK F
 TRACK G
 END OF PBCS OTS
 4. FOR STRATEGIC LATERAL OFFSET AND CONTINGENCY PROCEDURES FOR
 OPS IN
 NAT FLOW REFER TO NAT PROGRAMME COORDINATION WEBSITE
 WWW.PARIS-ICAO.INT/EURNAT/.

TRACK R
TRACK S
TRACK T
END OF PBCS TRACKS.
4.CLEARANCE DELIVERY FREQUENCY ASSIGNMENTS
FOR AIRCRAFT OPERATING
FROM AVPUT TO TALGO INCLUSIVE:AVPUT TO LIBOR
132.02,MAXAR TO VESMI
134.2,AVUTI
TO JANJO 128.7,KODIK TO TUDEP 135.45,UMESI TO
JOOPY 135.05, MUSAK TO SUPRY 128.45,RAFIN TO TALGO
119.42.
5.80 PERCENT OF NAVIGATIONAL ERRORS RESULT FROM
POOR COCKPIT PROCEDURES
ALWAYS CARRY OUT PROPER WAYPOINT PROCEDURES.
6.OPERATORS ARE ADVISED THAT VERSION 24 OF THE
GANDER DATA LINK
OCEANIC CLEARANCE DELIVERY CREW PROCEDURES IS
NOW VALID AND
AVAILABLE AS NAT OPS BULLETIN 2015-004 ON THE
WWW.PARIS-ICAO.INT/[EURNAT/](#)
WEBSITE.
7.OPERATORS ARE REMINDED THAT EASTBOUND
AIRCRAFT INTENDING TO
OPERATE IN THE OTS ARE REQUIRED TO COMPLY WITH
NAR FLIGHT PLANNING
RULES AS DEFINED IN THE CANADA FLIGHT
SUPPLEMENT OR WITH ROUTES AS
CONTAINED IN
THE DAILY BOSTON ADVISORY.
8.FL320 EXPIRES AT 30W AT 0600Z FOR TRACK X, Y, AND
Z.-

END OF PART THREE OF THREE PARTS)

the NOAA/FAA *North Atlantic Route Chart* has the advantage, for plotting purposes, of a 1° latitude/longitude graticule.

Provision of Climbs

8.2.14 Tactical ATS surveillance control and tactical procedural control are exercised in some areas of the NAT HLA. However, oceanic clearances for many NAT flights are of a strategic nature. Although such strategic clearances normally specify a single flight level for the entire crossing, there is often scope for enroute climb re-clearances as fuel burn-off makes higher levels more optimal. Controllers will accommodate requests for climbs whenever possible. When so re-cleared, flight crews should initiate the climb without delay (unless their discretion was invited or unless a conditional clearance was issued) and those aircraft not using CPDLC/ADS-C should **always** report to ATC immediately upon **leaving** the old and on **reaching** the new cruising levels.

8.2.148.2.15 Gander and Shanwick have instituted a procedure whereby flight crews transiting their Oceanic Control Areas (OCA) will be advised if higher flight levels become available for their flight. The functionality in the ATM System will routinely interrogate a flight's vertical profile to determine if higher flight levels have become available. When this occurs the Oceanic controller will verify the separation, complete all necessary coordination, and adhere to all safety related procedures before advising the flight that a climb is available, if requested.

Relief Flight Crew Members

8.2.158.2.16 Long range operations may include the use of relief flight crew. In such cases it is necessary to ensure that procedures are such that the continuity of the operation is not interrupted, particularly in respect of the handling and treatment of the navigational information.

8.3 PRE-FLIGHT PROCEDURES

RNP Approval Status

8.3.1 In order for an aircraft to be cleared to fly in airspace where a particular RNP authorization is required, or take advantage of any preferred handling provided to RNP aircraft, the aircraft's RNP approval status must be accurately reflected in Item 18 of the ATC flight plan. Flight crews shall also verify that the corresponding RNP value is entered in the Flight Management Computer, either by default or through manual input, in order to enable aircraft navigation system monitoring and alerting against the most stringent oceanic RNP capability filed in the ATC flight plan

Inertial Navigation Systems

Insertion of Initial Latitude and Longitude

8.3.2 Unless inertial navigation systems are properly aligned on the ground, to include inputting the exact aircraft position, systematic errors will be introduced. These errors can be corrected while the aircraft is on the ground but it is not possible to adequately recover from them while the aircraft is in flight, despite any indications to the contrary. Correct insertion of the initial position must therefore be checked before inertial systems are aligned and the position should be recorded in the flight log and/or Master Document. It is recommended that subsequent 'silent' checks of the present position and of the inertial velocity outputs (e.g. ground speed registering zero) be carried out independently by both flight crew members during (an early stage of) the pre-flight checks and again just before the aircraft is moved. Any discrepancies should be investigated.

8.3.3 With regard to the insertion of the initial coordinates while on the ramp, the following points should be taken into account:

8.5.18 Some State authorities require operators obtain specific approval and/or training prior to operations in areas of compass unreliability. Operators should confirm this prior to flights in those areas.

Deliberate Deviation from Track

8.5.19 Deliberate temporary deviations from track are sometimes necessary, usually to avoid severe weather. Whenever possible, ATC approval should be obtained before deviating from the assigned track (See Chapter 13). Nevertheless, such deviations have often been the source of gross errors as a consequence of failing to re-engage the autopilot with the navigation system. It should also be noted that selection of the 'turbulence' mode of the autopilot on some aircraft may have the effect of disengaging it from the aircraft navigation system. After use of the turbulence mode, extra care should be taken to ensure that the desired track is recaptured by the steering navigation system.

Uplink Message Latency Monitor Function

8.5.20 The uplink message latency monitor function is designed to prevent pilots from acting on a CPDLC uplink message that has been delayed in the network. Some NAT ANSPs uplink the latency monitor message to all CPDLC connected aircraft immediately after they enter each control area. An aircraft may therefore receive this message multiple times during a flight.

8.5.21 When the pilot receives the uplink CPDLC message SET MAX UPLINK DELAY VALUE TO 300 SEC he/she shall:

- a) Send a positive response to ATC as prompted by the avionics (ACCEPT [ROGER]) regardless of whether the aircraft supports the latency monitor function.

Note 1: It is important that pilots respond to the SET MAX UPLINK DELAY VALUE TO 300 SEC uplink message to avoid having open unanswered CPDLC messages in the system. This also applies to aircraft that have deficient message latency monitor functionality or no such functionality at all.

Note 2: The Global Operational Data Link Manual specifies that the pilot should append the response downlink with the free text message TIMER NOT AVAILABLE when the message latency monitor function is not available in the aircraft (refer to GOLD Table 4-1).

- b) If the aircraft is equipped with a correctly functioning message latency monitor, enter the specified uplink delay into the avionics in accordance with the aircraft procedures. Some avionics will automatically set the delay value in accordance with the uplink message and do not allow for a manual input.

Note 3: If an aircraft is instructed to log off and then log on again mid-flight, ATC may send the message SET MAX UPLINK DELAY VALUE TO 300 SEC again once the logon is completed.

8.5.22 When a pilot receives a CPDLC uplink message with an indication that the message has been delayed the pilot shall:

- a) Revert to voice communications to notify the ATS unit of the delayed message received and to request clarification of the intent of the CPDLC message; and
- b) Respond appropriately to close the message as per the instructions of the controller.
- c) The pilot must not act on the delayed uplink message until clarification has been received from the controller.

- b) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including ATS route designator or the track code) and intentions, on the frequency in use and on 121.5 MHz (or, as a backup, on the inter-pilot air-to-air frequency 123.450 MHz);
- c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);

Note.— If, as a result of actions taken under the provisions of 13.4.6 b) and c), the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.
- d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);
- e) for deviations of less than 9.3 km (5 NM) from the originally cleared track or route remain at a level assigned by ATC;
- f) for deviations greater than or equal to 9.3 km (5 NM) from the originally cleared track or route, when the aircraft is approximately 9.3 km (5 NM) from track or route, initiate a level change in accordance with Table 13-1;
- g) if the pilot receives clearance to deviate from cleared track or route for a specified distance and, subsequently, requests, but cannot obtain a clearance to deviate beyond that distance, the pilot should apply a 300 ft vertical offset from normal cruising levels in accordance with Table 13-1 before deviating beyond the cleared distance.
- h) when returning to track or route, be at its assigned flight level when the aircraft is within approximately 9.3 km (5 NM) of the centre line; and
- i) if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

Table 13-1

Originally cleared track or route centre line	Deviations ≥ 9.3 km (5.0 NM)	Level change
EAST 000° – 179° magnetic	LEFT RIGHT	DESCEND 300 ft (90 m) CLIMB 300 ft (90 m)
WEST 180° – 359° magnetic	LEFT RIGHT	CLIMB 300 ft (90 m) DESCEND 300 ft (90 m)

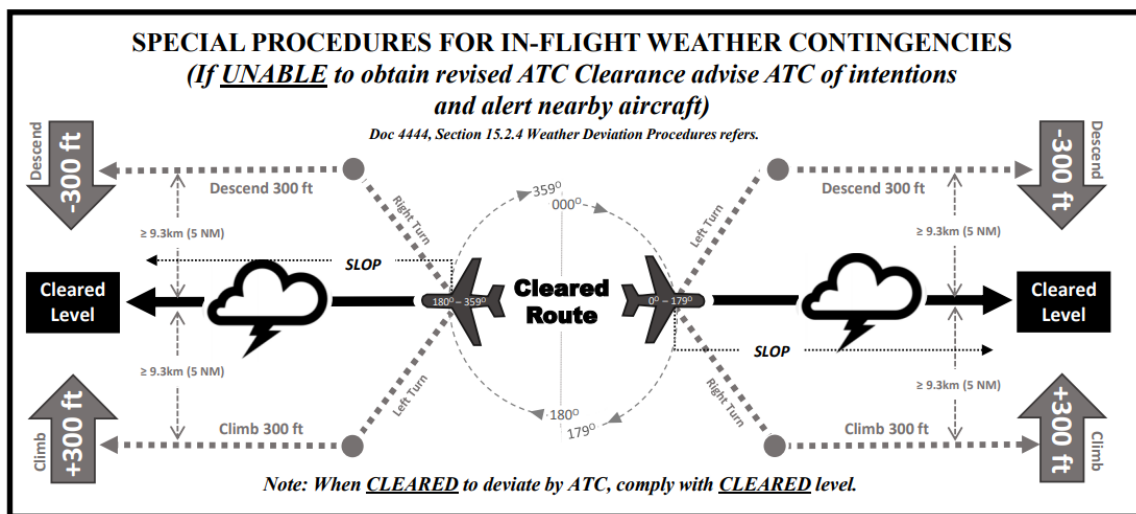


Figure 13-2. Visual aid for understanding and applying the weather contingency procedures guidance.

ATTACHMENT 6

OCEANIC CLEARANCES DELIVERY/FORMAT/CONTENT

OCEANIC CLEARANCE

There are three elements to an oceanic clearance: Route, Level, and Speed (if required). These elements serve to provide for the three basic elements of separation: lateral, vertical, and longitudinal.

Specific information on how to obtain oceanic clearance from each NAT OACC is published in State AIPs. Various methods of obtaining oceanic clearances include:

- a) use of published VHF clearance delivery frequencies;
- b) by HF communications to the OACC through the appropriate radio station (in accordance with specified timeframes
- c) a request via domestic or other ATC agencies;
- d) by data link, when arrangements have been made with designated airlines to request and receive clearances using on-board equipment (ACARS). Detailed procedures for its operation may vary. Gander, Shanwick, Santa Maria and Reykjavik OACCs provide such a facility and the relevant operational procedures are published in national AIPs and also as NAT OPS Bulletins which are available for download from the ICAO Paris website (see http://www.paris.icao.int/documents_open/subcategory.php?id=106)-<http://www.icao.int/EURNAT/>) New York OACC uses the FANS 1/A CPDLC function to uplink oceanic clearances to all aircraft utilising CPDLC

Format of Oceanic Clearance messages delivered via voice

Oceanic clearances delivered via voice in the NAT region will normally have the following

format: “OCEANIC CLEARANCE [WITH A <list of ATC info>], <atc unit> CLEAR

<ACID> TO

<clearance

limit>, VIA <route>, FROM <entry point> MAINTAIN <level> [<speed>] [.<free text>]”

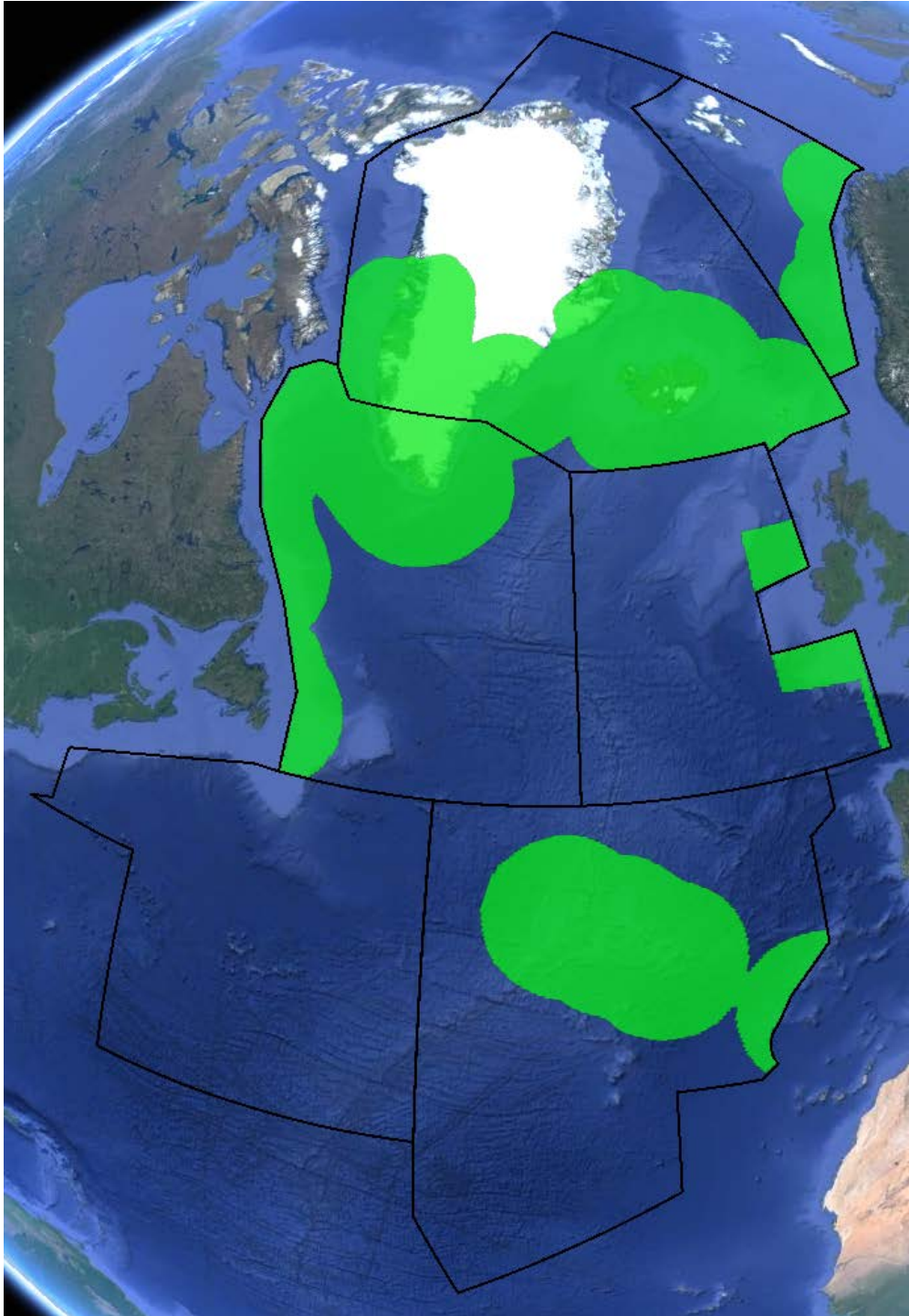
Note - Fields in [] are optional. In particular when the delivered clearance conforms with the “as filed” or “as requested” clearance (RCL) the Element [WITH A <list of ATC info>] is omitted

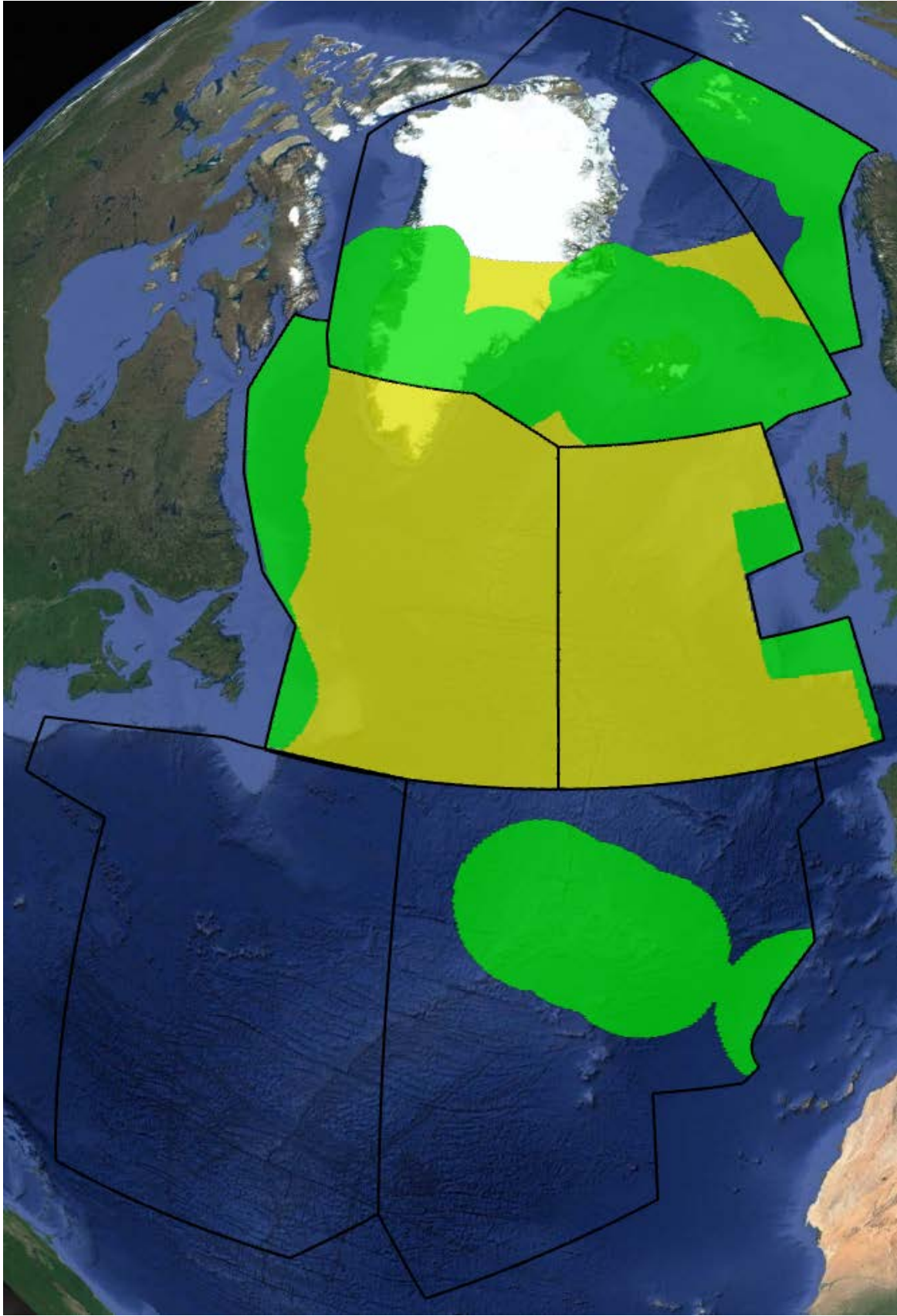
The following <list of ATC info> will advise a difference in the clearance from the filed or requested details. It will normally be in accordance with the table below:

Condition	List of ATC info	#
The controller changes, deletes or adds a waypoint other than the entry point.	REROUTE	1
Flight level in the clearance message is not the same as the flight level in the RCL.	LEVEL CHANGE	2
Speed in the clearance message is not the same as the speed in the RCL.	SPEED CHANGE	3
The first waypoint in the clearance message is not the same as in the RCL.	ENTRY POINT CHANGE	4

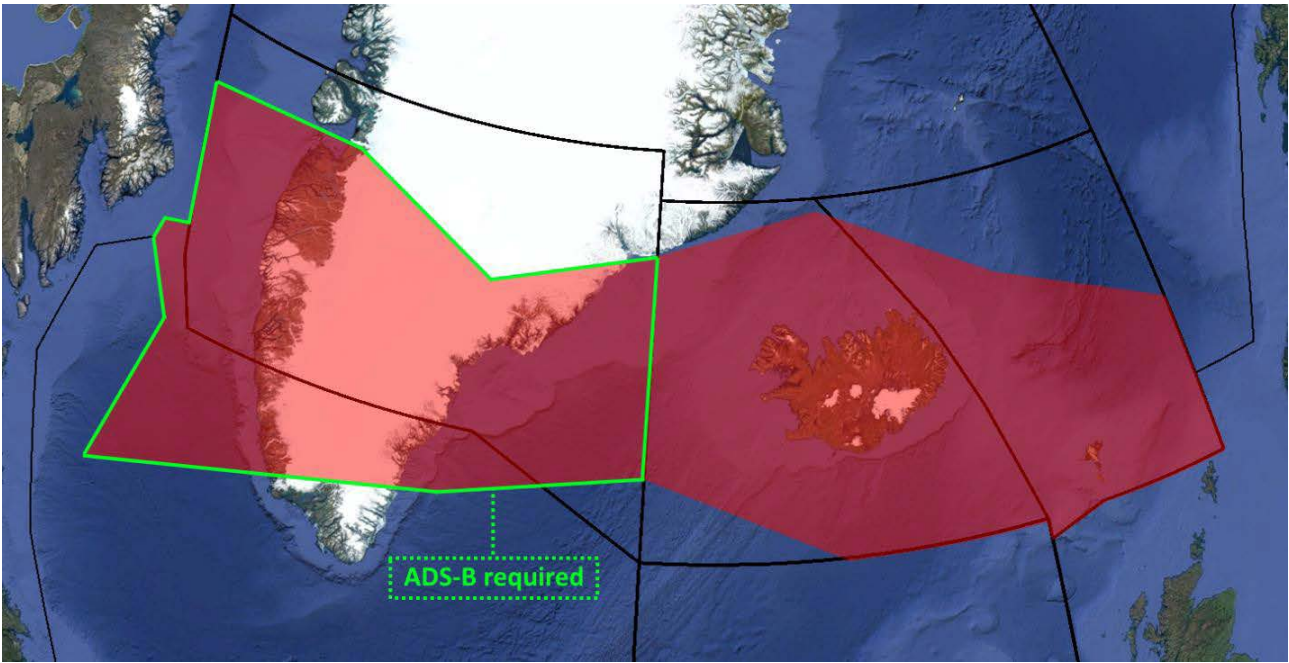
ATTACHMENT 8

NORTH ATLANTIC ATS SURVEILLANCE COVERAGE CHARTS (to be updated at later stage)





Green: surveillance with VHF voice
Yellow: surveillance without VHF voice.



For planning purposes, this area is bounded by the following:

Northern boundary: 65N000W - 67N010W - 69N020W - 68N030W - 67N040W - 69N050W - 69N060W - BOPUT_[LT2].

Southern boundary: GUNPA (61N000W) - 61N007W - 6040N010W - RATSU (61N010W) - 61N020W - 63N030W - 62N040W - 61N050W – SAVRY

Aircraft not equipped with FANS 1/A (or equivalent) systems will be allowed to operate within this area at DLM designated flight levels, provided the aircraft is suitably equipped (transponder/ADS-B extended squitter transmitter).

			(unchanged) ADS-C: Automatic Dependent Surveillance — Contract (ADS-C) services shall insert the D1 descriptor in Item 10b of the FPL.	
PBCS Compliance - III	Do I meet RCP 240?	29 March 2018	Support a means within the airline for receiving in-flight reports of observed performance and the ability of taking corrective actions for aircraft identified as not complying with RCP specifications; and, carry authorizations in the AOC/Ops. Specs from the State of the Operator or the State of Registry, as appropriate, in order to qualify for the separation minima shown in the Separation Requirements Table in Item 8 below. As fitted, carry authorizations in the AOC/OpSpecs from the State of the Operator or the State of Registry to utilize CPDLC. This includes a statement of compliance with RTCA DO-258/EUROCAE ED-100 or equivalent and that it is capable of operating outside VHF data link coverage (availability of Satcom data)	
Mandatory ADS-B Carriage	Tango 9 Tango 290 Northern boundary: 645N000W -		Aircraft not equipped with FANS 1/A (or equivalent) systems will be allowed to operate	

	<p>678N010W [LT3]- 69N020W - 68N030W - 67N040W - 69N050W - 69N060W - BOPUT. Southern boundary: GUNPA (61N000W) - 61N007W - 6040N010W - RATSU (61N010W) - 61N020W - 63N030W - 62N040W - 61N050W – SAVRY</p>		<p>within this area at DLM designated flight levels, provided the aircraft is suitably equipped (transponder/ADS-B extended squitter transmitter).</p>	
Tango 9 and Tango 290 Requirements	<p>a) VHF 8.33Khz equipped (Field 10a: 'Y')</p> <p>b) NAT HLA certified (Field 10a: 'X')</p> <p>c) RNP2 certified: -Field 10a: GNSS – 'G' -Field 10a: RNP – 'R' -Field 10a: Other Info – 'Z' -Field 18: "NAV/RNP2</p> <p>d) Surveillance equipment - SSR Mode S - Field 10d: E Transponder - Mode S, including aircraft identification, pressure altitude and extended squitter (ADS-B) capability ADS-B B1 Ads-B with dedicated 1090 Mhz ADS-B 'out' capability</p>			
Datalink Mandate Compliance	<p>» Phase 2A, commenced 5 February 2015: FL 350 to FL 390 (inclusive) all tracks within the NAT OTS. This phase applies to all aircraft operating on or at any point along the tracks; » Phase 2B,</p>			

ATTACHMENT 11
BIBLIOGRAPHY AND OTHER REFERENCE MATERIAL

ICAO Annex 2* – Rules of the Air

www.icao.int

ICAO Annex 6* Operation of aircraft

www.icao.int

ICAO Annex 10* Aeronautical communications

www.icao.int

ICAO Doc 4444* Procedures for Air Navigation Services – Air Traffic Management (PANS–ATM)

www.icao.int

ICAO Doc 7030* (Regional Supplementary Procedures (SUPPS))

www.icao.int

ICAO Doc 8168* Procedures for Air Navigation Services – Aircraft Operations (PANS–OPS)

www.icao.int

ICAO Doc 8643* Aircraft Type designators

www.icao.int

ICAO Doc 9574* Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive

www.icao.int

ICAO Doc 9613* Performance-Based Navigation Manual (PBN)

www.icao.int

ICAO Doc 10037* Global Operational Data Link (GOLD) Manual

www.icao.int

ICAO NAT HF Guidance Material (NAT Doc 003)

www.icao.int/EURNAT/ > [EUR & NAT Documents](#) > [NAT Documents](#) > [NAT Doc 003](#)

Sample Oceanic Checklist

www.icao.int/EURNAT/ > [EUR & NAT Documents](#) > [NAT Documents](#) > [NAT OES Bulletins](#)

* ICAO saleable documents - Please contact ICAO Headquarters, Montreal sales@icao.int

Sample Oceanic Expanded Checklist

www.icao.int/EURNAT/ > [EUR & NAT Documents](#) > [NAT Documents](#) > [NAT OES Bulletins](#)

Oceanic Errors Safety Bulletin

www.icao.int/EURNAT/ > [EUR & NAT Documents](#) > [NAT Documents](#) > [NAT OES Bulletins](#)

NAT OPS Bulletins

www.icao.int/EURNAT/ > [EUR & NAT Documents](#) > [NAT Documents](#) > [NAT OPS Bulletins](#)

ICAO NAT Planning Documents Supporting Separation Reductions and Other Initiatives

www.icao.int/EURNAT/ > [EUR & NAT Documents](#) > [NAT Documents](#) > [Planning documents supporting separation and other initiatives](#)

Canada AIP

www.NAVCANADA.ca/

Canadian Flight Supplement - A saleable document which can be ordered via:

<http://products.navcanada.ca>

EASA CS-ACNS - Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance

<http://www.eurocontrol.int/articles/library>

EASA AMC 20-24

easa.europa.eu/system/files/dfu/Annex%20II%20-%20AMC%2020-24.pdf

ETSO- CS-ETSO

www.easa.europa.eu/ws_prod/g/doc/Agency_Mesures/Certification%20Spec/CS-ETSO.pdf

Iceland AIP

<http://eaip.samgongustofa.is/>

Ireland AIP

http://iaip.iaa.ie/iaip/IAIP_Frame_CD.htm

RTCA DO 260/A/B

<https://standards.globalspec.com/std/1994503/rtca-do-260>

UK AIP

<http://www.nats-uk.ead-it.com/public/index.php.html>