SHANWICK (EGGX) & GANDER (CZQO) OCEANIC CONTROL PROCEDURES

REVISION 2023/08 - EFFECTIVE 10 AUGUST 2023

CONTENTS

PRE | PREFACE

Distribution and Scope

This manual is for controllers of the Shanwick and Gander Oceanic Control Areas (OCA) and contains specific and local procedures relevant to these sectors.

Exclusion of Liability

This manual is for use on the VATSIM Network only and should never be adopted for real world use.

The information published within this document is made available without warranty of any kind; the Organisation 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.

Several procedures have been adapted or created using content published in the AIS of both countries. Any information in this document does not constitute as a real-world replacement for any official procedure and any similar procedures set out here or influenced by online content is written under the Limited License provided by the two AISs.

Acknowledgements and Mutual Agreement

This document is the product of the efforts of a number of people over the years. Without these efforts, this document would not have been possible to produce. On behalf of all the members of the VATSIM divisions involved, this acts as an acknowledgement and thanks for their work.

The contents of this document are agreed by:

- Kieran Hardern – VATSIM UK – Operations Director
- Dieter Windels – VATCAN – Gander OCA Chief
- Jack Edwards – VATSIM UK – Operations Department
- Amos Ng – VATCAN – Gander OCA Operations Director

Marked Changes

Changes made since the last release are marked with a black bar, as indicated, in the left-hand margin. They are also described briefly in the table below.

Amendment History

Revision	Effective Date	Notes
2023/08	10 Aug 2023	Minor formatting, spelling and grammar corrections throughout, instances of OACC changed to OAC, longitudinal separation minima changed for OEP, OWAFS introduced, clarified tag transfer methods to be used, phraseology for time restrictions corrected, phraseology for clearance amendments updated; coordination procedures for Concorde added, all Concorde procedures moved to Annex B.
2021/08	12 Aug 2021	Minor formatting, spelling and grammar corrections throughout, NAT_FSS introduced as bandbox position, EGGX and CZQO FSS positions changed to CTR, Concorde, handoff and further example phraseology added to Annex A, separation minima added for external sectors.
2021/04	22 Apr 2021	Minor formatting, spelling and grammar corrections, Minor phraseology changes in Annex A, Brest Frequency Corrections, Multiple changes in Montreal & Gander (Domestic) Sectorisation to facilitate implementation of GOTA, References to CZQX changed to CZQO for Gander Oceanic, Shanwick and Gander HF & VHF frequency changes
2021/03	25 Mar 2021	Complete re-write
1	22 Dec 2013	First Publication

Time References

All time references within this document are Coordinated Universal Time (UTC), or Zulu time, unless otherwise specified.

Understanding 'VATSIMisms'

At various points in this document, text boxes have been added to help you, as a VATSIM controller, understand how and why real-world procedures might have been simplified, made redundant, or even more complex because of the nature of VATSIM.

Note that anything contained in these boxes is for **information** purposes **only** – procedures will always be in the main body of the text.

*Useful information or explanations will be contained in text boxes with the same format as this. Note that information contained within these boxes are **not** procedures.*

Interpretation of Words

To avoid any misunderstanding within this document, certain words are to be interpreted as having specific meanings when they are the operative words in an instruction.

'shall', 'is to', 'are to' and 'must'	means that compliance with the instruction or requirement by the controller/pilot is mandatory.
'should'	means that it is strongly advisable that an instruction is carried out; it is recommended or discretionary. It is applied where the more positive 'shall' is unreasonable but nevertheless a controller would have to have good reason for not doing so.
'may'	means that the instruction is permissive, optional or alternative, e.g. 'a controller may seek assistance…' but would not if they did not need it.
'will'	is used for informative or descriptive writing, e.g. 'pilots will file…', is not an instruction to the controller.

List of Figures

Validity of Procedures

Amendments to Oceanic Procedures (Shanwick)

Amendments to existing procedures and the introduction of new procedures will take place by the publication on the VATSIM UK forum in the Operations section.

- Procedure Changes (PC) are used for permanent changes
- Temporary Instructions (TI) are used for temporary changes

All published PCs and TIs shall have precedence over procedures published in this document. Any changes that affect both OCAs will be published by both divisions.

Amendments to Oceanic Procedures (Gander)

TBN

Any changes that affect both OCAs will be published by both divisions.

AIP-Published Data

Certain information included in this document is published in national AIPs. Where there are differences, the information published in the AIPs shall take precedence. VATSIM UK and Gander Oceanic vACC aim to notify controllers of any changes using the methods described above.

Letters of Agreement (LoAs)

Letters of Agreement between VATSIM UK and Gander Oceanic vACC and adjacent FIRs/vACCs are published separately. Whilst both divisions aim to ensure the information in each is up to date, where there are conflicts, the LoA will override any procedures detailed in this document, except where instructions are otherwise promulgated as described above.

GEN

SECTION 1
GENERAL UNIT OPERATING PROCEDURES

GEN | UNIT GENERAL OPERATING PROCEDURES

The North Atlantic region consists of the Nuuk, Reykjavík, Bodø Oceanic, Shanwick Oceanic, Gander Oceanic, New York Oceanic and Santa Maria Oceanic FIRs. This document defines procedures for the Shanwick and Gander Oceanic Control Areas (OCAs).

Shanwick and Gander use a mix of space-based surveillance systems, satellite communication, and HF and VHF radios to manage aircraft within their respective OCAs. HF stations are staffed by Radio Operators at Gander ("Gander Radio") in Canada and Ballygirreen ("Shanwick Radio") in the Republic of Ireland. The Oceanic Area Control Centres are located respectively in Gander and Prestwick (Scotland), which act as the controlling authorities for their respective OCAs. On VATSIM, the distinction between Radio Operator and Controller is not made, with the Oceanic Controller responsible for the airspace and in contact with pilots.

Previously, ATS within the NAT Region was provided procedurally using position reports. Shanwick and Gander can now utilise space-based surveillance systems such as Automatic Dependent Surveillance (ADS). Communication can be over voice or via Controller-Pilot Datalink Communication (CPDLC) where aircraft equipment allows.

Chapter 1 Provision of Air Traffic Services

1.1 Roles and Responsibilities

- Provide the appropriate ATS within their stated AoR in order to ensure a safe, orderly and expeditious flow of air traffic.
- Verify flight data including updating and managing the relevant datablock.
- Maintain a listening watch and conduct standard radiotelephony communication with aircraft.
- Provide ATS to aircraft using ADS-B derived surveillance data within their area of responsibility (AoR).
- Provide assistance to aircraft in a state of emergency.
- Coordinate the movement of aircraft into and out of the sector.
- Issue clearances to aircraft to join, leave or cross regulated airspace.
- When aircraft are accepted into the sector, ensure separation exists in accordance with this document.
- Confirm all data transfer, revisions and estimates have been effected as required in local instructions.

1.2 ATS Surveillance Systems

On VATSIM, ADS coverage is assumed throughout the Shanwick & Gander OCAs. Simulated ADS-B data and position reports are assumed to be received through the VATSIM network which are then interpreted and displayed by controller clients or relevant plugins.

1.3 Assumptions of Aircraft Equipment

In the real-world, a series of navigation, communications and surveillance standards are defined in order to enhance the provision of ATS within the shared Oceanic Control Area. These specifications allow for reduced separation standards to be implemented between suitably equipped aircraft pairs as well as reduce the need for voice communications.

On VATSIM, these specifications are simplified and divided into 2 categories:

- ADS-B equipped aircraft;
- Non-ADS-B equipped aircraft (other aircraft).

ADS-B equipped aircraft are assumed to:

- comply with the requirements and specifications of the Datalink Mandate (DLM);
- comply with the requirements for Performance Based Communication and Surveillance (PBCS);
- comply with the requirements for Advanced Surveillance Enhanced Procedural Separation (ASEPS);
- provide electronic position reports through ADS-C and/or CPDLC (are AGCS equipped)

Non-ADS-B equipped aircraft (other aircraft) are assumed to:

- **not** comply with the requirements and specifications of the Datalink Mandate (DLM);
- **not** comply with the requirements for Performance Based Communication and Surveillance (PBCS);
- **not** comply with the requirements for Advanced Surveillance Enhanced Procedural Separation (ASEPS);
- **not** provide electronic position reports through ADS-C and/or CPDLC.

The vNAAATS plugin indicates to controllers which category each aircraft falls into based on the equipment code. ADS-B equipped aircraft are marked as Air-Ground Communications System (AGCS) equipped

1.4 Position Reports

On VATSIM, the requirement for voice position reports is dependent on aircraft equipment code.

- **ADS-B equipped** aircraft – position reports **optional**
- **Other aircraft** – position reports **mandatory**

Note: *Aircraft that are not equipped with ADS-B are also considered to not be equipped with ADS-C or CPDLC, which would provide automatic/electronic position reporting functionality.*

Note: *For some events, it may be necessary to mandate that all pilots do not provide position reports due to frequency congestion.*

1.5 Oceanic Clearance

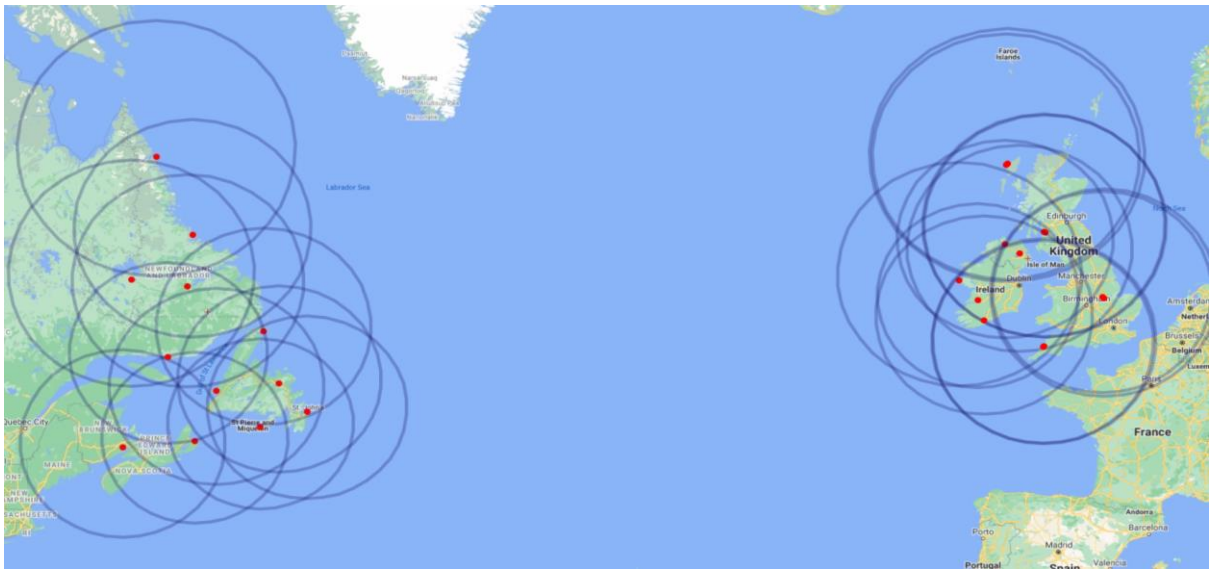
Pilots must request oceanic clearance at least 30 minutes prior to the oceanic entry point. Clearance can be requested via:

- HF Voice Frequency
- VHF Voice Frequency - (Only available within range of VHF receivers – see chart below)
- natTRAK Website

Phraseology for oceanic clearances is provided in Annex A.

When the delivery function is not split with another controller, track controllers may operate a second VHF clearance delivery frequency alongside HF to improve readability.

Figure 1 – Shanwick and Gander VHF Frequency Range at FL350



***Note:** Audio for VATSIM (AfV) does not allow duplex coupling (XC) of HF and VHF frequencies, so pilots on one frequency will not be able to hear pilots on the other.*

1.5.1 Oceanic Clearance Prior to Departure

At some airfields proximate to the NAT HLA, an oceanic clearance is required prior to departure. On VATSIM, VHF coverage is assured at these airfields.

Departure Point	Jet Departures	Non-Jet Departures
EIDW **EIWT** **EIME**	For all Oceanic entry points request when airborne.	
EICK	If flight planned to enter Shanwick airspace via OMOKO, TAMEL or LASNO, Oceanic clearance required prior to departure. All other Oceanic entry points, if the elapsed time to Shanwick Entry Point is 40 minutes or less, Oceanic clearance required prior to departure.	
EGAA **EGAC** **EGAE** **EGPF** **EGPK**	If flight planned to enter Shanwick at GOMUP, oceanic clearance is required prior to departure. For all other Oceanic entry points, request when airborne.	Request when airborne.
All other aerodromes	If the elapsed time to the Shanwick entry point is 40 minutes or less oceanic clearance is required prior to departure.	

1.6 Selective Calling (SELCAL)

Selective calling or SELCAL (pronounced "sell-call") is a method by which pilots may be notified that a controller wishes to contact them on the voice frequency.

SELCAL works by the controller triggering a series of 4 audio tones to play over the HF frequency, which are then received by the SELCAL units onboard all the aircraft tuned to that frequency. If these tones correspond to the code assigned to a specific aircraft, a notification is relayed to the pilots. SELCAL therefore allows pilots to reduce the volume of the tuned HF frequency since in real life, HF transmissions are subject to significant background static that is both tiring and distracting to listen to over longer periods of time.

On VATSIM, pilot clients act in the same way as SELCAL units - when a SELCAL that corresponds to the code the pilot entered when they logged into the network is received, it will generate an alert to the pilot.

The function of the SELCAL system shall be checked on first contact with each Oceanic Controller. In EuroScope, controllers can trigger a SELCAL tone (e.g. EM-DG) by using:

- ".selcal emdg"
- "SELCAL EM-DG"
- ".selcal", then click on the aircraft

Chapter 2 Separation Standards

2.1 General

Separation on VATSIM is subject to some simplification. As such, an understanding of the separation requirements in this document will be sufficient for the purpose of oceanic control on VATSIM.

Standard vertical or horizontal separation shall be provided between all flights in Class A airspace. At least one form of procedural separation must be maintained between all flights:

- Vertical
- Longitudinal
- Lateral

Note: *"longitudinal" and "lateral" refer to aircraft orientation, not the lines of longitude or latitude.*

The separation standards defined in this document are divided into two categories based on ADS-B equipage. In order to apply ADS-B based separation minima between two aircraft, both aircraft must be equipped with ADS-B. This requirement can be referred to with the phrase "suitably equipped aircraft pairs".

ADS-B does not allow controllers to assign headings to aircraft as they would in domestic, radar-controlled airspace. It merely allows for more accurate monitoring of aircraft position. The only practical way to intervene in order to prevent a conflict at a late stage is to apply vertical separation.

Note: *Concorde Separation Rules are defined in Annex B - Concorde Procedures.*

2.2 Vertical Separation

Vertical separation exists when the vertical distance between aircraft is never less than the prescribed minimum. The vertical separation minima are:

- Between aircraft flying subsonic:
  a. Up to FL290 apply 1000ft;
  b. Above FL290 apply 2000ft, except that between FL290 and FL410 inclusive, 1000ft may be applied between RVSM approved aircraft operating in airspace designated as being notified for the application of this separation standard.

- Between aircraft flying supersonic and between aircraft flying supersonic and aircraft flying subsonic:
  a. Up to FL450 apply 2000ft;
  b. Above FL450 apply 4000ft.

On VATSIM, all aircraft with an RFL above FL290 are assumed to be RVSM approved.

2.2.1 Cruise Climbs and Level Blocks

During cruise climbs and level blocks aircraft are considered to occupy all levels specified in the clearance, regardless of ADS or verbal level reports. In a cruise climb, aircraft may only climb, whereas level blocks allow aircraft to climb or descend to any level within the block.

2.3 Lateral Separation

Lateral separation is established distance between the routes of two aircraft (note: this is not the distance between aircraft at any given point, but distance between any 2 points along 2 different routes).

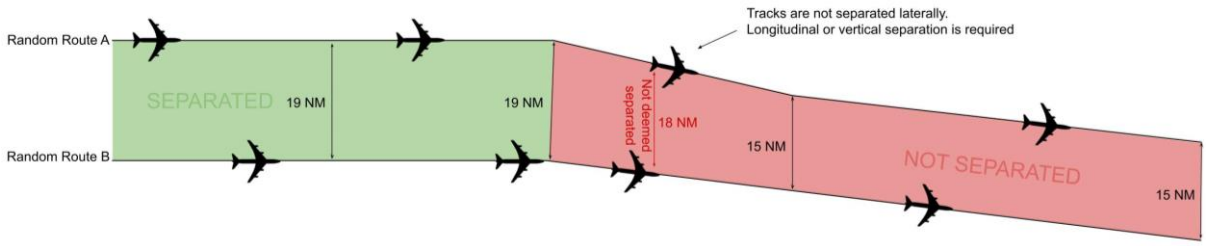
2.3.1 Parallel or Non-Intersecting Tracks

Parallel or non-intersecting **tracks** are deemed separated provided that they are spaced by at least:

ADS-B Equipped Aircraft Pairs	Other Aircraft Pairs
19 NM	**60 NM** or **1 degree** *(subject to gentle slope rules)*

If **tracks** are not deemed laterally separated then either longitudinal or vertical separation must be ensured.

Figure 2 – 19NM Lateral Separation



In Figure 2, aircraft A and B are laterally separated for the first portion of their route (green), however lateral separation does not exist once aircraft A's track deviates south. As soon as the first aircraft reaches the route portion that is no longer laterally separated, separation is lost. Therefore, another form of separation must be in place and separation ensured before this point is reached by either aircraft.

2.3.1.1 Gentle-Slope Rules

> Gentle slope rules are only relevant if one of the aircraft in the pair is not ADS-B equipped.

Considering coordinates on a flat surface, parallel tracks separated by 1 degree would equate to 60NM. However, as the earth is spherical, the separation between parallel tracks actually falls to below 60NM. For this reason, the gentle-slope rules ensure separation never falls below 50.5NM.

The gentle slope rules allow lateral separation to be defined in terms of degrees, rather than nautical miles. At different latitudes, slopes of different gradients may be deemed separated from each other.

Tracks separated by 1 degree latitude are deemed separated from each other, provided that when travelling over 10 degrees longitude, the change in latitude of one of the tracks does not exceed:

- 3 degrees at or South of 58N
- 2 degrees between 58N and 70N
- 1 degree at or North of 70N and South of 80N

Example

Two aircraft travel on parallel tracks. The table shows different possible parallel tracks travelling west over the next 10° longitude (from 20W to 30W) – are the aircraft separated?

Aircraft A	Aircraft B	Change in Latitude	Allowable Maximum	Separated?
5820N to 5830N	5920N to 5930N	0°	3°	Yes
5820N to 5530N	5920N to 5630N	3°	3°	Yes
5820N to 6130N	5920N to 6230N	3°	2°	**No**
6720N to 6930N	6820N to 7030N	2°	2°	Yes
6820N to 7030N	6920N to 7130N	2°	1°	**No**

2.3.2 Lateral Separation of OTS

All co-directional tracks published in a NAT Track Message are laterally separated for ADS-B equipped aircraft pairs.

Performance Based Communication Surveillance (PBCS) tracks are separated by less than one degree of latitude (0° 30' rather than 1° degree). Aircraft that are **not** ADS-B equipped that are operating on PBCS tracks are not considered laterally separated from aircraft operating on adjacent PBCS tracks. It is therefore recommended (but not mandatory on VATSIM) to re-clear non-ADS-B equipped aircraft via non-PBCS tracks.

As aircraft on VATSIM often fly tracks outside of the published times, conflicts between aircraft on opposite direction published tracks are possible.

The 'Concorde Tracks' are also deemed laterally separated for all aircraft.

2.3.3 Strategic Lateral Offset Procedure (SLOP)

The Strategic Lateral Offset Procedure allows pilots to deviate from their route up to 2 NM right of track at any increment of 0.1 NM, remaining parallel to the centreline. The purpose of the SLOP is to reduce wake turbulence encounters and also to reduce the chance of a collision when aircraft are required to conduct emergency descents or deviate from their cleared route/level. Pilots will not deviate until entering oceanic airspace and will re-join their cleared track before leaving.

Aircraft conducting SLOP do not require a clearance to do so and are not required to inform the controlling agency. For the purposes of ensuring separation, the effect of SLOP is not required to be considered by controllers – this information is included here for reference only

2.4 Longitudinal Separation

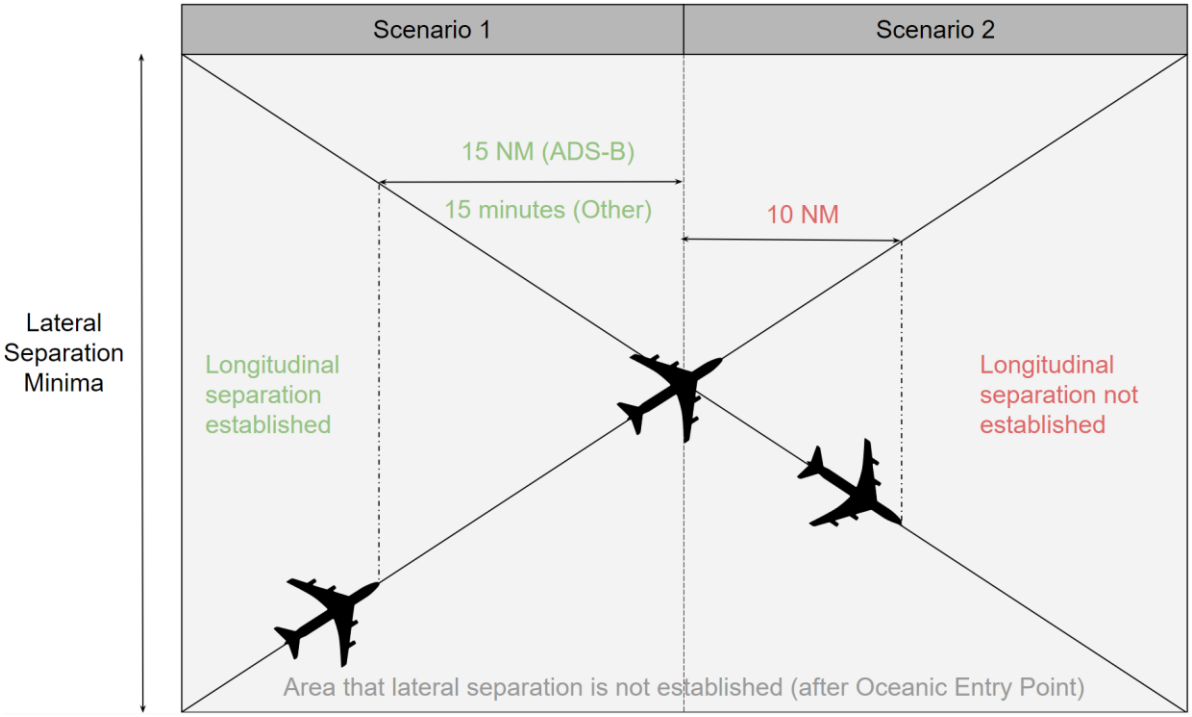
2.4.1 Crossing Tracks Same Direction

For aircraft operating on the same or intersecting tracks (tracks are not laterally separated) where the relative angle between the tracks is less than 90 degrees, aircraft must be longitudinally separated by:

ADS-B Equipped Aircraft Pairs	Other Aircraft Pairs
4 minutes at the oceanic entry point and **15 NM** thereafter	**10 minutes** on the same track and **15 minutes** on crossing tracks

Note: *10 minutes separation may be reduced subject to the Mach Number Technique*

Figure 3 – Crossing Tracks (Same Direction)



2.4.1.1 Mach Number Technique (MNT)

The Mach number technique is only relevant if one aircraft in the pair is not ADS-B equipped.

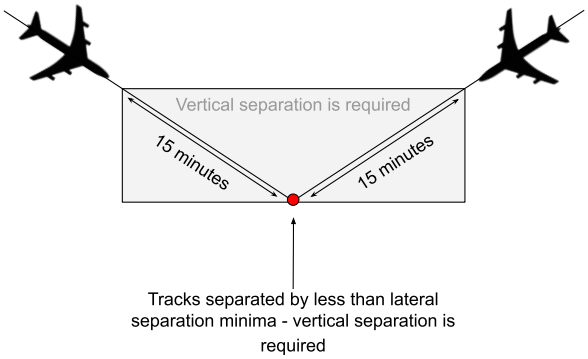
Where turbojet aircraft flying a constant Mach number converge on the same point (which must be reported by both aircraft or confirmed by other means) and then proceed down the same track or diverging tracks, the 10 minutes longitudinal separation may be reduced if the following aircraft maintains a slower speed:

Following Aircraft slower by	Separation
0.01 Mach	10 minutes
0.02 Mach	9 minutes
0.03 Mach	8 minutes
0.04 Mach	7 minutes
0.05 Mach	6 minutes
0.06 Mach or more	5 minutes

2.4.2 Crossing Tracks Opposite Direction

For aircraft operating on the same or intersecting tracks (i.e. tracks that are not laterally separated) where the relative angle between the tracks is between 90 and 180 degrees, longitudinal separation cannot be established throughout. Vertical separation must be established at least **15 minutes prior** to the closest point of approach.

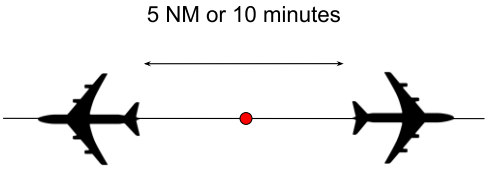
Figure 4 – Crossing Tracks (Opposite Direction)



Vertical separation is no longer required once both aircraft have passed each other by:

ADS-B Equipped Aircraft Pairs	Other Aircraft Pairs
5 NM	**10 minutes**

Figure 5 – Crossing Tracks (Opposite Direction) Passed

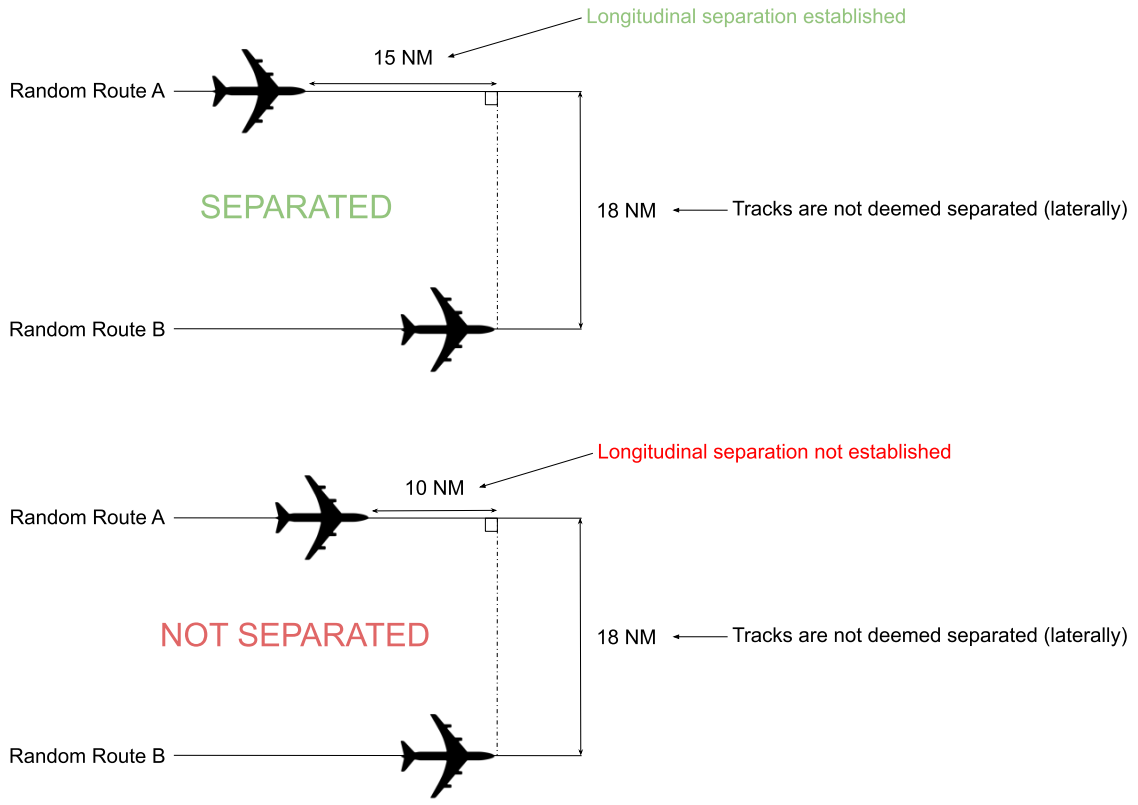


2.4.3 Applying Longitudinal Separation on Parallel Tracks not Laterally Separated

Where non-intersecting or parallel tracks are not laterally separated, longitudinal separation must be established. Refer to Crossing Tracks Same Direction for required minima.

> ***Note:*** *the following diagram illustrates the application of longitudinal minima for ADS-B equipped aircraft. For non-ADS-B equipped aircraft, the minima must be substituted for the correct values.*

Figure 6 – Longitudinal Separation on Parallel Tracks



2.4.4 Operations Without A Fixed Speed (OWAFS)

All oceanic clearances shall include an assigned Mach number (or airspeed).

After oceanic entry, aircraft may be instructed to RESUME NORMAL SPEED on a tactical basis. This allows aircraft to fly a cost index (ECON) speed. ATC must be informed if the speed changes by M0.02 or more from the last assigned Mach number.

It is recommended that OWAFS is only applied to aircraft whose planned minimum longitudinal separation from other aircraft is 60NM or greater. Longitudinal separation must be monitored and a fixed Mach number may be re-assigned if necessary.

Chapter 3 Altimeter Setting Procedures and Meteorology

3.1 Altimeter Setting Procedures

3.1.1 Transition Level

Area	Transition Level
NAT Oceanic Control Areas	FL55

Chapter 4 General Coordination Regulation

Any traffic that is not deemed coordinated under the terms of this chapter shall be individually coordinated.

4.1 Deemed Coordination of Traffic Between Shanwick and Gander

Aircraft transferred between Shanwick and Gander shall be deemed coordinated provided:

- the aircraft is operating in compliance with their current oceanic clearance;
- if operating on a NAT Track, is at a level specified in the NTM for the direction of flight;
- the RFL has not been changed level within 15 minutes of the common sector boundary;
- no objection has been raised by the receiving controller.

4.2 Deemed Coordination of En-Route Traffic Entering the OCA

Aircraft in receipt of an oceanic clearance shall be deemed coordinated provided that:

- the aircraft is at the level specified in the oceanic clearance;
- the aircraft will cross the oceanic entry point within 3 minutes of the most recently received time estimate or according to a time restriction specified in the oceanic clearance and;
- no objection has been raised by the receiving controller.

4.3 Deemed Coordination of En-Route Traffic Leaving the OCA

Cruising traffic which has reached the RFL indicated on the flight plan is deemed to have been coordinated provided that:

- the RFL has not been changed within 5 minutes of the oceanic exit point and;
- there is no known conflict and separation is maintained against OCA traffic;
- no objection has been raised by the receiving controller.

4.4 Transfer of Control and Communication

Transfer of control and communications is at the receiving sector boundary except:

- For aircraft entering the Shannon (EISN) FIR (or NOTA/SOTA) from Shanwick between SUNOT and BEDRA (inclusive):
  - Transfer of Control – sector boundary
  - Transfer of Communications – **1 degree prior to sector boundary**

4.4.1 Transfer of Tags

On VATSIM, two distinct methods are used for the transfer of tags. The Gander and Shanwick OCAs border regions that use different methods.

4.4.1.1 Silent Method (Oceanic and Europe)

The silent transfer method shall be employed between:

- All oceanic sectors and;
- Shanwick OAC and all adjacent domestic sectors.

Under the silent transfer method, controllers shall transfer communications together with the transfer of the aircraft's tag. Receiving controllers shall only 'accept' the transfer of an aircraft tag from the transferring controller when the aircraft has 'checked in' on the receiving controller's frequency.

4.4.1.2 Confirmed Method (Americas)

The other transfer method shall be employed between:

- Gander OAC and all adjacent domestic sectors.

Under the confirmed method, the transferring controller shall initiate transfer of the aircraft's tag and wait until the receiving controller has 'accepted' the tag before transferring communications.

4.5 Coordination of Direct Routings

Direct routings that cross sector boundaries must be coordinated. This coordination may be completed electronically via the COPX function of EuroScope.

> Controllers should be aware that accepted coordination of a direct routing only appears in the datablock for the coordinating and receiving controller. It is therefore advisable for the current controller to re-enter/re-type any direct into the datablock after it has been agreed via electronic coordination.

Chapter 5 Route Structures

5.1 Organised Track System (OTS)

5.1.1 North Atlantic (NAT) Tracks

Introduction

To minimise flight time and thereby the cost of operating aircraft through oceanic airspace, all operators desire to operate in a relatively small portion of oceanic airspace. The optimum routings vary according to departure and destination airfields, enroute weather, winds aloft and aircraft performance.

Design

To maximise the flow of traffic along the preferred, optimal routings, Shanwick & Gander publish a list of set North Atlantic (NAT) Tracks each day. The process of track design depends upon input from operators, upper wind conditions, limitations of airspace and feasibility for surrounding controlling authorities. This system can accommodate a higher flow of traffic than using 'random routings' for all aircraft.

The published tracks are defined by a list of permissible flight levels and series of waypoints, which include an oceanic entry and exit point. These are positioned on the domestic FIR boundaries and are generally named using the standard five-letter convention. Between the entry and exit points, waypoints are defined by Latitude and Longitude (e.g. 57N 040W, also written 5740N or 57/40) and are generally positioned every 10 degrees of longitude.

Validity

In the real world, the tracks are only valid at certain times of day, with a westbound set published for use for aircraft crossing the 30 degrees west line between 1130 and 1900Z and an eastbound set for aircraft crossing the same line between 0100 and 0800Z. The two sets of tracks are not necessarily laterally separated as they are never valid at the same time.

Shanwick OAC (Prestwick) publishes the westbound tracks around 2200z before activation in the morning and Gander OAC publishes the eastbound tracks around 1400z in the afternoon.

Naming

NATs are named using letters of the alphabet. Westbound tracks are named with the most northerly track designated 'Alpha' and working down the alphabet to the final westbound track. Eastbound tracks are identified with the most southerly track designated 'Zulu' and working up through the alphabet to the final eastbound track. These names are re-used every day when old tracks are removed and new tracks published, though the number of tracks each day may vary.

Random Routes

The use of the OTS is not mandatory, pilots may file routes that over/under-fly, cross join or leave the system. Any route that does not follow the OTS for the entire track is referred to as a "random route".

5.1.2 Track Message Identifier (TMI)

The NAT Tracks are published in a single NAT Track Message (NTM) with a Track Message Identification (TMI) number. This is simply the Julian calendar day that the tracks are published. Checking this number confirms that both the pilot and the controller have the latest track information. "Track Alpha" from one day to another will be a different published route, however "Track Alpha, TMI 001" will only be repeated once every year (1st January). Occasionally if the NAT message is amended after publication, a letter will be appended to the TMI number (e.g. 001A) and the entire message is re-issued.

5.1.3 NAT Track Message

Here is an example of a NAT Track Message (NTM) issued by Gander on 11th March 2021 specifying eastbound tracks valid for the next morning. Only one track is published (Track Z) with only eastbound flight levels specified. The TMI is 071 and further important information is published regarding the provision of ATS below.

Figure 7 – NTM Example

```
111353 CZQXZQZX
(NAT-1/1 TRACKS FLS 320/400 INCLUSIVE
MAR 12/0100Z TO MAR 12/0800Z
PART ONE OF ONE PART-
Z TUDEP 52/50 53/40 53/30 52/20 DINIM ELSOX
EAST LVLS 320 340 360 380 400
WEST LVLS NIL
EUR RTS EAST NIL
NAR N445A N441A N433A-
REMARKS:
1.TMI IS 071 AND OPERATORS ARE REMINDED TO INCLUDE TMI NUMBER IN
 OCEANIC
CLEARANCE READ BACK.
2.ADS-C AND CPDLC ARE MANDATED FOR LEVELS 290-410 IN NAT AIRSPACE.
3.PBCS OTS LEVELS 350-390. PBCS TRACKS AS FOLLOWS
NO ASSIGNED PBCS TRACKS
END OF PBCS OTS.
4.AS PER NOTAM H0282/21,GANDER OCEANIC VERBAL CLEARANCE DELIVERY SVC
 NOT AVBL.
EASTBOUND OCEANIC FLT WILL REC CLEARANCE BY MONCTON, MONTREAL OR
 GANDER ACC.
OPR ARE TO REQUEST THEIR CLR ON CONTROL FREQ.DATA LINK CLR SERVICE
 UNCHANGED.
5.80 PERCENT OF NAVIGATIONAL ERRORS RESULT FROM POOR COCKPIT
 PROCEDURES
ALWAYS CARRY OUT PROPER WAYPOINT PROCEDURES.
6.SEE NAT OPS BULLETIN 2020?001 FOR DATALINK CREW PROCEDURES.
ICAO WEBSITE WWW.ICAO.INT
7.EASTBOUND AIRCRAFT OPERATING IN THE OTS MUST COMPLY WITH NAR FLIGHT
PLANNING RULES IN CANADA FLIGHT SUPPLEMENT OR DAILY BOSTON ADVISORY
8.AIRCRAFT EXITING THE NAT INTO TO A DOMESTIC AGENCY SHOULD CONTINUE
TO OPERATE TRANSPONDERS ON CODE 2000 UNTIL OTHERWISE ADVISED BY ATC
SEE ICAO NAT DOC 007 6.8 FOR MORE INFO.-
END OF PART TWO OF TWO PARTS)
```

5.1.4 Use of OTS on VATSIM

On VATSIM, the most recently published tracks can be used at **any time** and are not limited to the levels published. As such, controllers should be aware that there is the possibility of traffic on eastbound and westbound tracks (where one set is 'out of date') will conflict.

If the eastbound and westbound tracks do conflict, coordination must occur between controllers responsible for clearing aircraft in both directions along the OTS. It is advised, in this instance that controllers should clear aircraft on levels that follow the semi-circular rule.

5.2 Tango Routes

The Tango routes are a fixed set of routes in the South Eastern of the Shanwick OCA.
Clearance delivery must be conducted over HF for northbound aircraft (due to range requirements) but may be conducted on VHF for southbound aircraft.

5.2.1 T9 and T290

T9/T290 are unidirectional routes established just west of the BOTA. They connect the SOTA to the Madrid FIR and are generally used by aircraft from the British Isles to Portugal, the Canaries and Cape Verde Islands.

- T9 - Southbound - LASNO to BEGAS
- T290 - Northbound - ADVAT to GELPO

Note: *T9/T290 are laterally separated from each other.*

5.2.1.1 Transponder Operation on T9/T290

Pilots will reset their assigned SSR code to 2000, 10 minutes after passing LASNO, BEGAS, TAMEL or BERUX.

5.2.2 T213

T213 is a bi directional route established to the West of T290 and connecting the SOTA to the Madrid FIR.

- T213 – Bi-directional – TAMEL to BERUX

5.2.3 T13 and T16

T13/T16 are unidirectional routes established just west T213 and cross into Santa Maria Oceanic airspace eventually terminating just North of the Madeira Archipelago.

- T13 - Northbound – NILAV to OMOKO
- T16 - Southbound - OMOKO to GONAN

Note: *T13/T16 share a common waypoint (OMOKO) and are therefore not laterally separated.*

5.3 North American Routes

The North American Routes (NARs) are fixed routes designed for application to aircraft flying oceanic random routes at and above FL290 to transition to domestic airspace. Occasionally the NAT Message will specify NARs which must be used in conjunction with certain tracks.

Note: *Oceanic controllers do not assign NARs. This section is for information only.*

Westbound NARs consist of 2 portions;

1. The coastal fix is linked to an inland fix (INF) by what is termed the 'common portion'.
2. The 'non-common portion' will then link the inland fix towards the system airports.

Where an airport does not have defined non-common portions, pilots should file the full route of the common portion to the inland fix.

Eastbound NARs consist of a single portion - the 'common portion' which connect the inland fix to the coastal fix.

All NARs are designated by N*, where 'N' is spoken "North American Route" and * is the published designator (usually a 1/2-digit number followed by a letter).

Most of the routes are divided into two portions:

1. Common Portion - That portion of the route between a specified coastal fix or an oceanic entry/exit point and a specified Inland Navigation Fix (INF). Some routes have a common portion only (N598A-N700A);
2. Non-Common Portion - That portion of the route between a specified INF and a system airport. The routes are within the high-level airspace structure with a transition to/from system airports.

The routes are prefixed by the abbreviation "N" with the numbering for the common portions orientated geographically from south to north. The ODD numbers have eastbound application while the EVEN numbers apply to westbound.

Aircraft can only join the NAR System:

- At the identified coastal fix or oceanic entry/exit point; or
- On departure from one of the identified system airports; or
- At an identified INF.

NARs may be assigned by ATC for the tactical management of air traffic in Canadian Domestic airspace.

SHW

SECTION 2
SHANWICK OCEANIC AREA CONTROL - SHW

SHW | SHANWICK OCEANIC AREA CONTROL

Chapter 1 General Operating Procedures

1.1 Shanwick Control Positions

Shanwick Oceanic Control manages en-route traffic in the Shanwick OCA.

Designator	Relief	Coordination Name	VHF Alias Frequency	HF Frequency
NAT_FSS	NAT__FSS	*NAT Bandbox*	131.900	5.649
EGGX_CTR	EGGX__CTR	*Shanwick*	131.800	6.547
EGGX_A_CTR	EGGX_1_CTR	*Shanwick Alpha*	131.450	8.906
EGGX_B_CTR	EGGX_2_CTR	*Shanwick Bravo*	131.550	2.899
EGGX_C_CTR	EGGX_3_CTR	*Shanwick Charlie*	131.650	8.879
EGGX_D_CTR	EGGX_4_CTR	*Shanwick Delta*	131.750	10.021
EGGX_F_CTR	EGGX_5_CTR	*Shanwick Foxtrot*	131.850	6.622

1.2 Shanwick Delivery Positions

Shanwick Delivery provides oceanic clearance delivery for aircraft initially entering oceanic airspace in the Shanwick OCA.

Designator	Relief	Coordination Name	VHF Frequency
EGGX_DEL	EGGX__ DEL	*Shanwick Delivery*	127.650
EGGX_A_ DEL	EGGX_1_ DEL	*Shanwick Delivery Alpha*	127.900
EGGX_B_ DEL	EGGX_2_ DEL	*Shanwick Delivery Bravo*	123.950
EGGX_C_ DEL	EGGX_3_ DEL	*Shanwick Delivery Charlie*	124.175
EGGX_D_ DEL	EGGX_4_ DEL	*Shanwick Delivery Delta*	126.375
EGGX_F_ DEL	EGGX_5_ DEL	*Shanwick Delivery Foxtrot*	128.375

1.3 Radiotelephony Callsigns

On VATSIM, the following callsigns may be used:

- **HF** Frequencies (may utilise VHF alias on VATSIM): **"Shanwick Radio"**.
- **VHF** Frequencies for clearance delivery: **"Shanwick Oceanic"** or **"Shanwick Radio"**.

NAT Bandbox shall use the appropriate callsign for Shanwick or Gander, depending on the position of the aircraft.

1.4 Splitting Procedures

EGGX_CTR must be staffed before any other Shanwick position can be manned.

Due to the variable nature of the NAT routings, division of responsibility between controllers is not published. Splits which divide the OCAs north/south should be agreed between the relevant controllers and coordinated with adjacent sectors. It is also not uncommon for controllers to implement another split (e.g. Clearance, Track Controller).

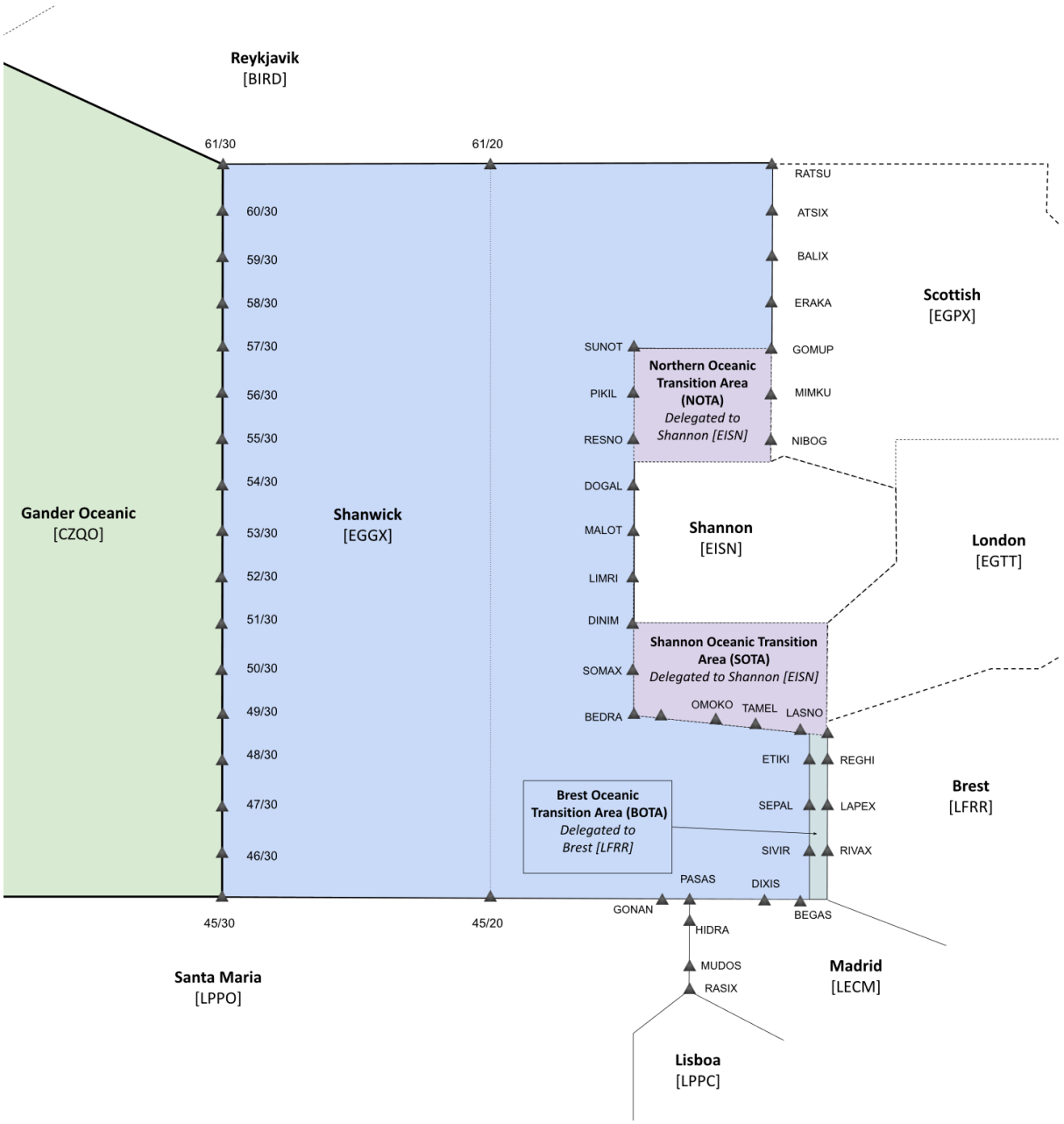
1.5 Extended Coverage

NAT_FSS covers the Shanwick and Gander OCAs when local ATC is offline.

Chapter 2 Area of Responsibility

The Shanwick FIR forms a border with Gander at 030W west, Santa Maria at 45N and Reykjavík at 61N. The FIR also forms eastern borders with domestic FIR/UIRs: Scottish, Shannon, London and Brest and Madrid. All airspace within the FIR is Class A above FL55 and is referred to as the Shanwick OCA (Oceanic Control Area). Airspace below FL55 is Class G.

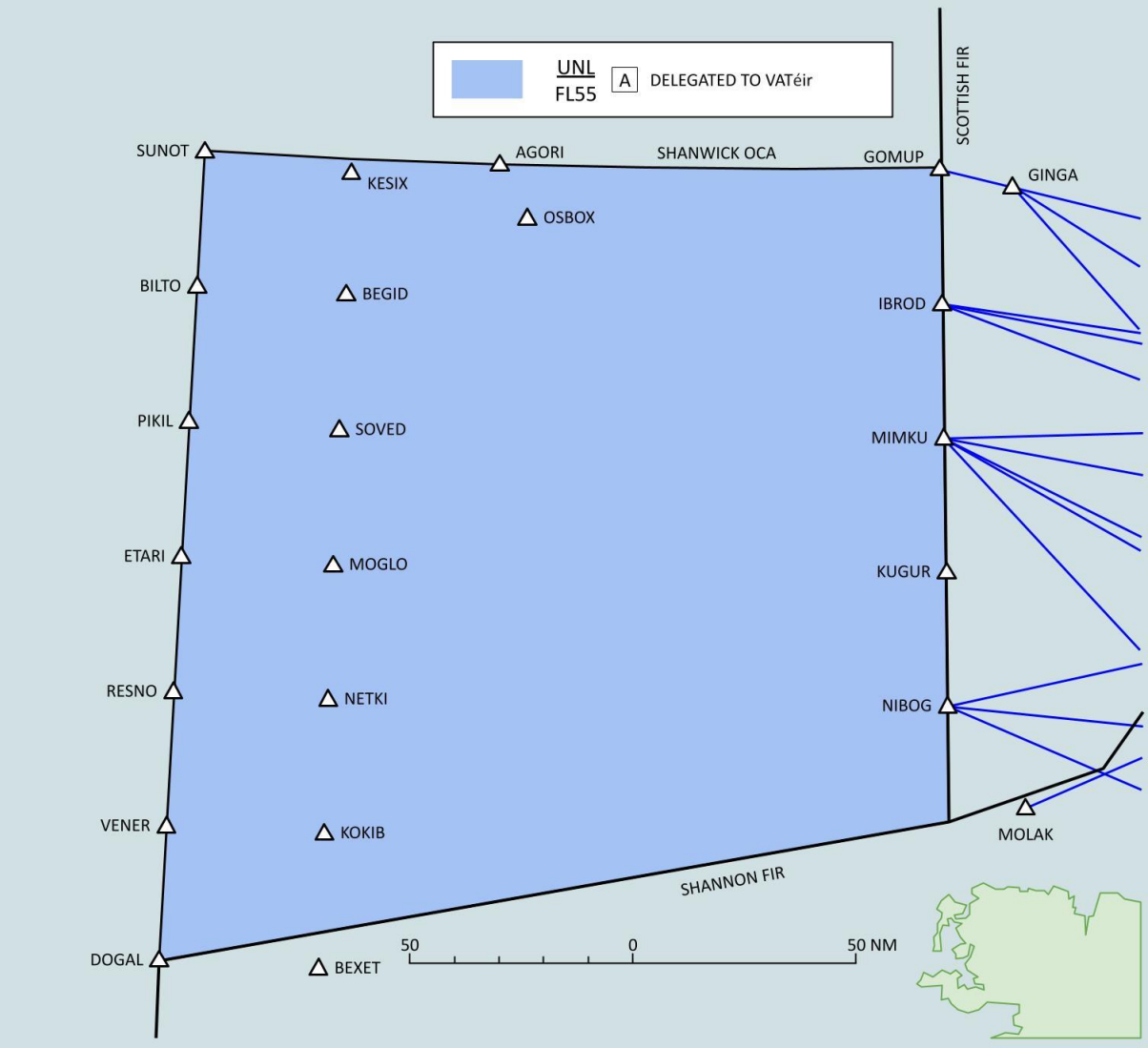
Figure 8 – Shanwick Oceanic Control Area



2.1 Northern Oceanic Transition Area (NOTA)

Above FL55, the NOTA is delegated from Shanwick OAC to Shannon ACC. Shannon provides radar based ATS in this area.

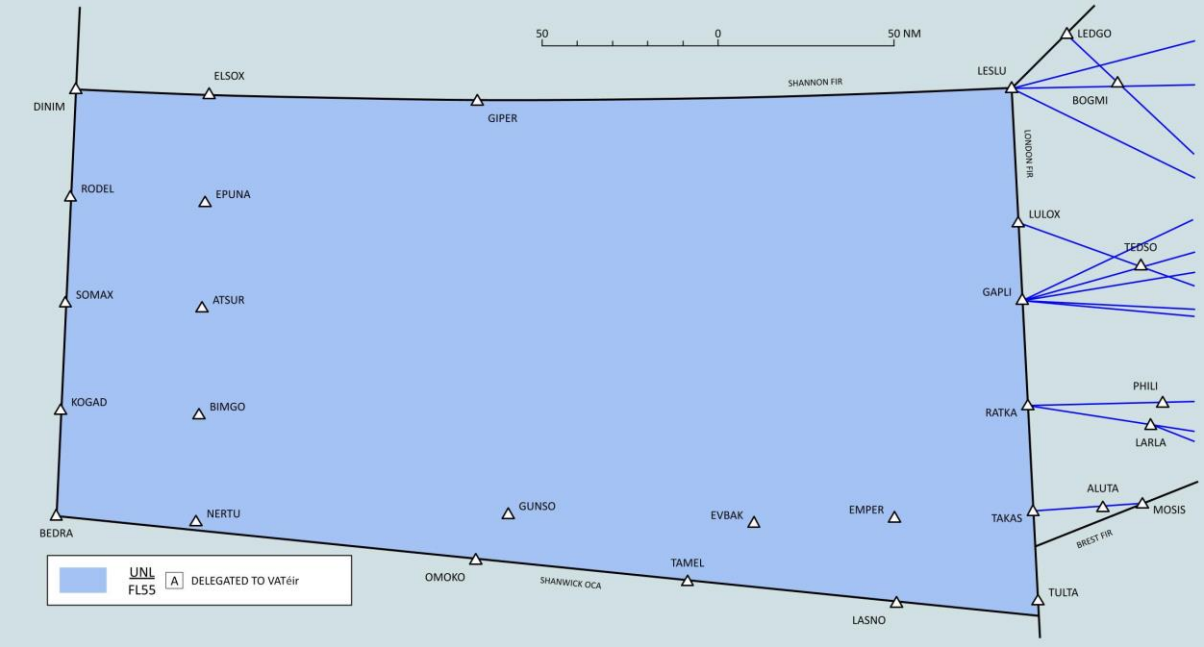
Figure 9 – Northern Oceanic Transition Area



2.2 Shannon Oceanic Transition Area (SOTA)

Above FL55, the SOTA is delegated from Shanwick OAC to Shannon ACC. Shannon provides radar based ATS in this area.

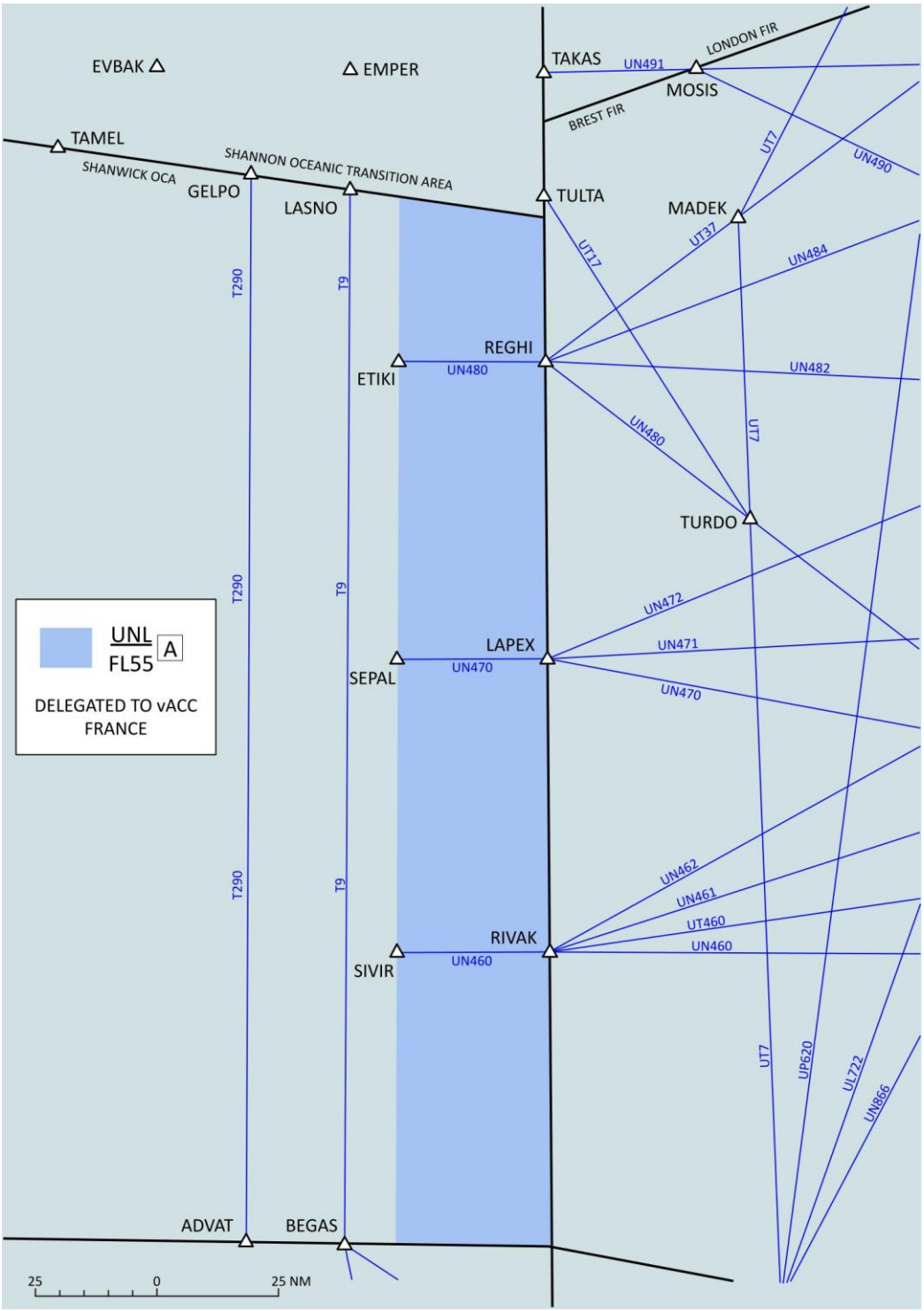
Figure 10 – Shannon Oceanic Transition Area



2.3 Brest Oceanic Transition Area (BOTA)

Above FL55, the BOTA is delegated from Shanwick OAC to Brest ACC. Brest provides radar based ATS in this area.

Figure 11 – Brest Oceanic Transition Area



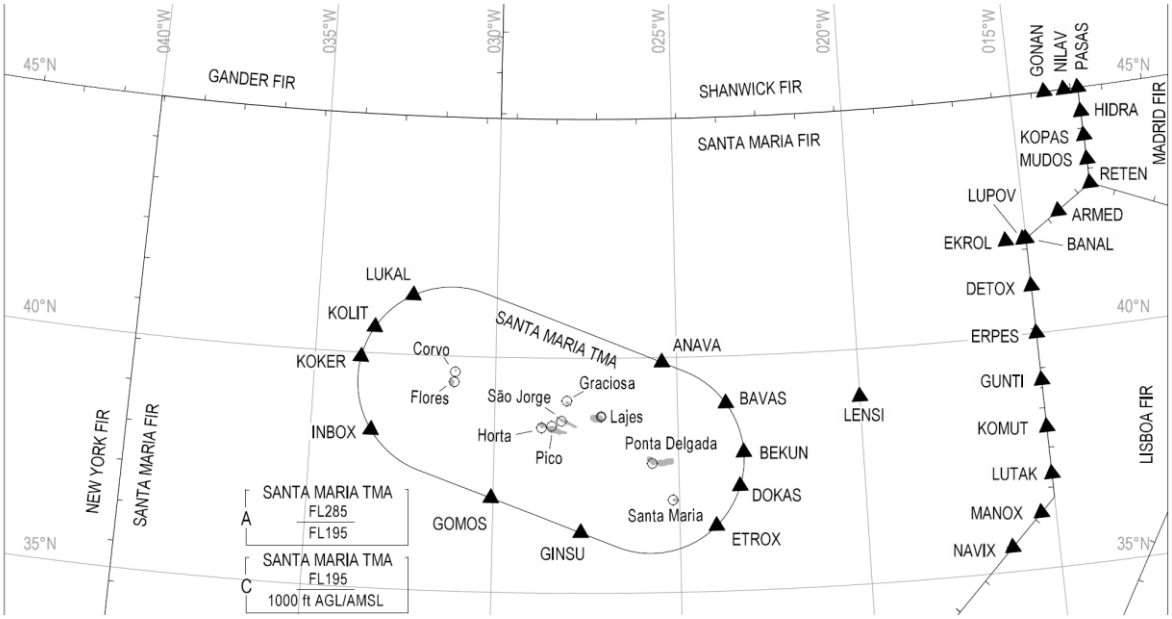
Chapter 3 Coordination and Procedures with Adjacent Sectors

3.1 Santa Maria OAC (LPPO)

Santa Maria provides a mixture of radar and procedural services within their FIR. Radar stations at the Azores allow for a central area of radar coverage surrounded by procedurally controlled airspace which Shanwick borders. All handoffs are to the primary non-radar sector.

RTF Callsign	"Santa Maria Radio"
Equipment	Non-radar
Lateral Separation Minima	50NM
Longitudinal Separation Minima	10 Minutes
Special Transfer Conditions	None

Figure 12 – Santa Maria OAC Sectorisation



3.1.1 Non-radar Sector

LPPO_FSS 132.075 MHz

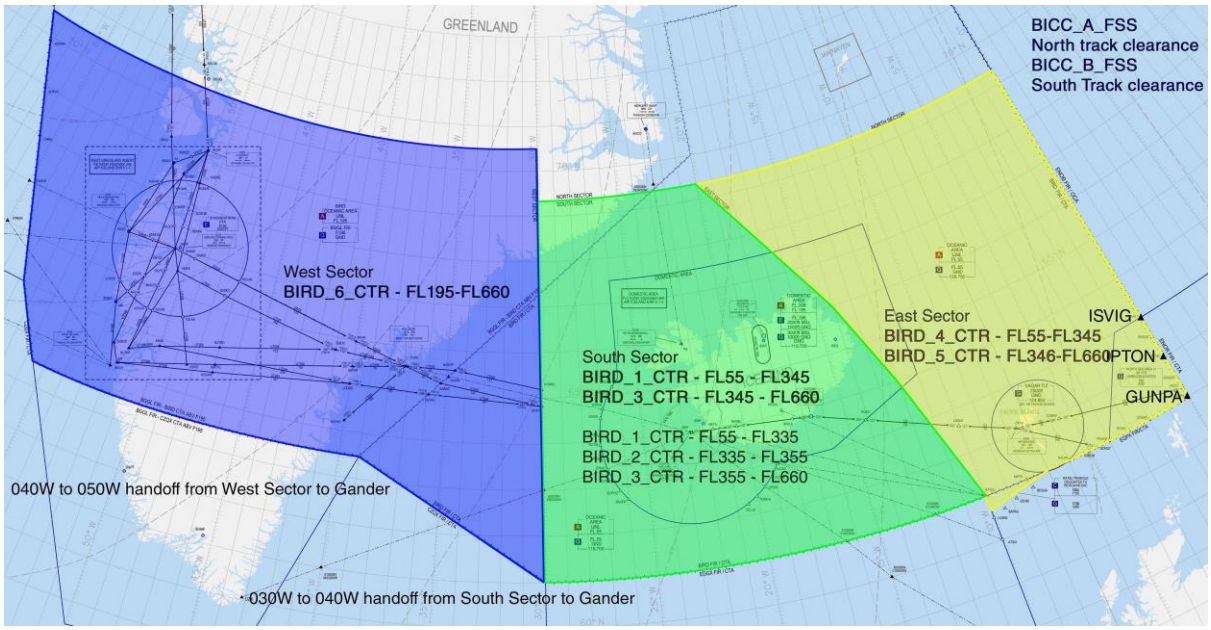
3.2 Reykjavík ACC (BIRD)

Reykjavík provides a domestic radar service and borders the Northern edge of the Shanwick OCA.

The "RATSU triangle" is delegated from Scottish to Reykjavík (East Sector) at the junction between Reykjavík, Scottish and Shanwick – refer to Scottish ACC.

RTF Callsign	"Reykjavik Control"
Equipment	Non-radar
Lateral Separation Minima	10NM at and above FL270, 5NM below FL270
Longitudinal Separation Minima	10NM at and above FL270, 5NM below FL270
Special Transfer Conditions	None

Figure 13 – Reykjavík ACC Sectorisation



Note: *BIRD_1_CTR is the bandbox position and covers all BIRD sectors top-down.*

3.2.1 South Sector

The south sector can be dynamically split (vertically) according to demand, refer to Figure 13.

BIRD_1_CTR 119.700 MHz
BIRD_2_CTR 125.700 MHz
BIRD_3_CTR 128.600 MHz

3.2.2 East Sector

The east sector can be dynamically split (vertically) according to demand, refer to Figure 13.

BIRD_4_CTR 126.750 MHz

BIRD_5_CTR 132.300 MHz

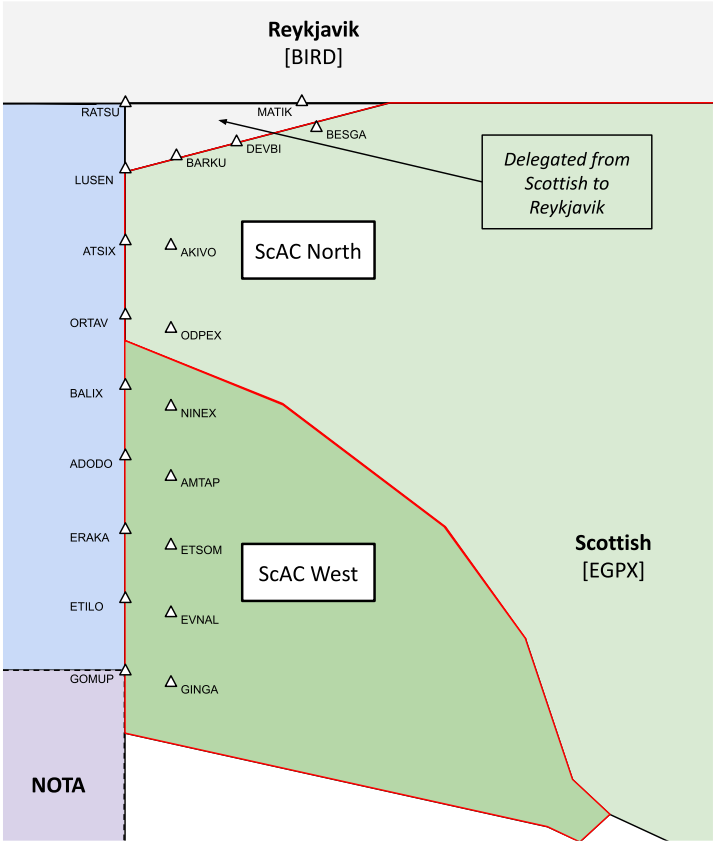
3.3 Scottish ACC (EGPX)

Scottish Area Control (ScAC) provides a domestic radar service and borders Shanwick at 010W between Reykjavík and the NOTA. The "RATSU triangle" is delegated from Scottish to Reykjavík.

RTF Callsign	"Scottish Control"
Equipment	Radar equipped
Lateral Separation Minima	7NM for aircraft following ATS routes
Longitudinal Separation Minima	15NM dropping to 5NM if speed control is applied.
Special Transfer Conditions	None

Note: *Shanwick is responsible for the coordination of east and westbound traffic at GOMUP, on the edge of NOTA. Shanwick must inform ScAC West if westbound traffic is to be transferred to Shannon rather than Shanwick.*

Figure 14 – Scottish ACC Sectorisation



3.3.1 ScAC North

SCO_N_CTR	SCO_E_CTR	SCO_CTR
129.225 MHz	121.325 MHz	135.525 MHz

3.3.2 ScAC West

SCO_W_CTR	SCO_WD_CTR	SCO_CTR
132.725 MHz	133.875 MHz	135.525 MHz

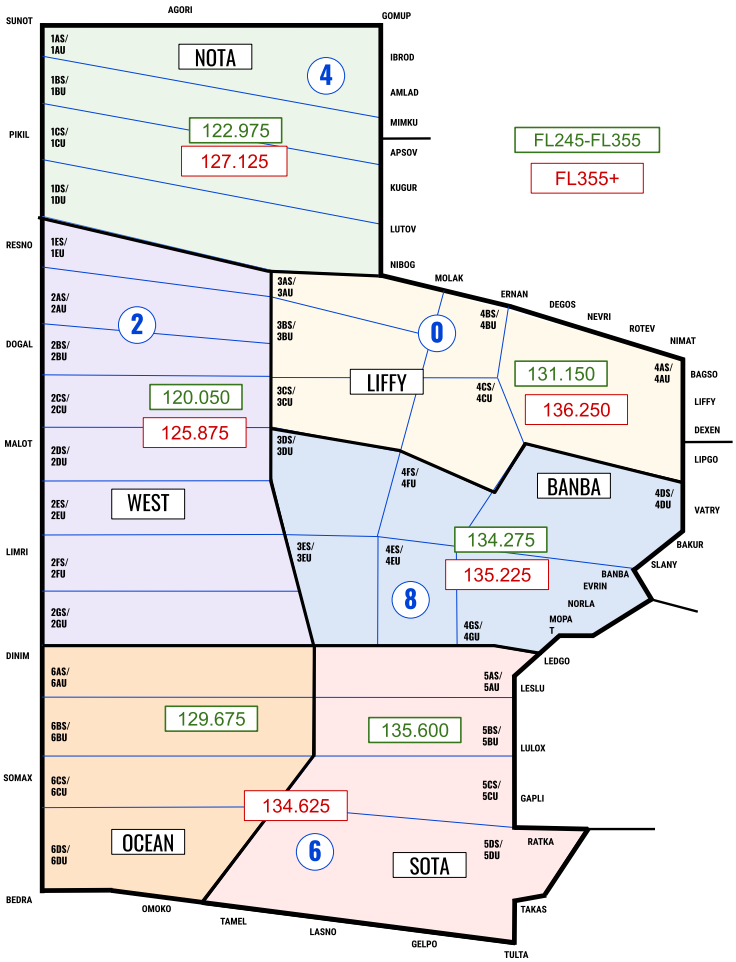
3.4 Shannon ACC (EISN)

Shannon provides a domestic radar service and borders Shanwick from GOMUP counter-clockwise around the Shannon FIR to TULTA. Shannon also provides a domestic radar service to traffic inside the NOTA and SOTA.

Although Shannon have defined a day-to-day configuration of the high-level airspace, they use a dynamic sectorisation above FL245 that varies according to the particular traffic demands. The airspace can also be split vertically at FL355; when this occurs, the sector from FL245-FL355 will be referred to as 'Upper', with the sector above FL355+ referred to as 'Super'.

RTF Callsign	"Shannon Control"
Equipment	Radar equipped
Lateral Separation Minima	5NM
Longitudinal Separation Minima	5NM
Special Transfer Conditions	Eastbound aircraft between SUNOT and BEDRA (inclusive): ▪ Transfer of Control – sector boundary ▪ Transfer of Communications – **1 degree prior to sector boundary.**

Figure 15 – Shannon ACC Sectorisation



3.4.1 Shannon NOTA

Super (FL355+)

EISN_4_CTR 127.125 MHz	**Shannon NOTA – Upper**

Upper (FL245-FL355)

EISN_N_CTR 122.975MHz	**Shannon West – Upper**

3.4.2 Shannon West

Super (FL355+)

EISN_2_CTR 125.875 MHz	**Shannon West – Upper**

Upper (FL245-FL355)

EISN_W_CTR 120.050 MHz	**EISN_CTR** *(EISN_E_CTR)* 131.150 MHz

3.4.3 Shannon Ocean

Super (FL355+)

EISN_6_CTR 134.625 MHz	**Shannon Ocean – Upper**

Upper (FL245-FL355)

EISN_O_CTR 129.675 MHz	**Shannon West – Upper**

3.4.4 Shannon SOTA

Super (FL355+)

EISN_6_CTR 134.625 MHz	**Shannon SOTA – Upper**

Upper (FL245-FL355)

EISN_S_CTR 135.600 MHz	**Shannon West – Upper**

3.4.5 Shannon Low Level

Low Level (DB-FL245)

EISN_L_CTR 124.700 MHz	**EISN_CTR** *(EISN_E_CTR)* 131.150 MHz

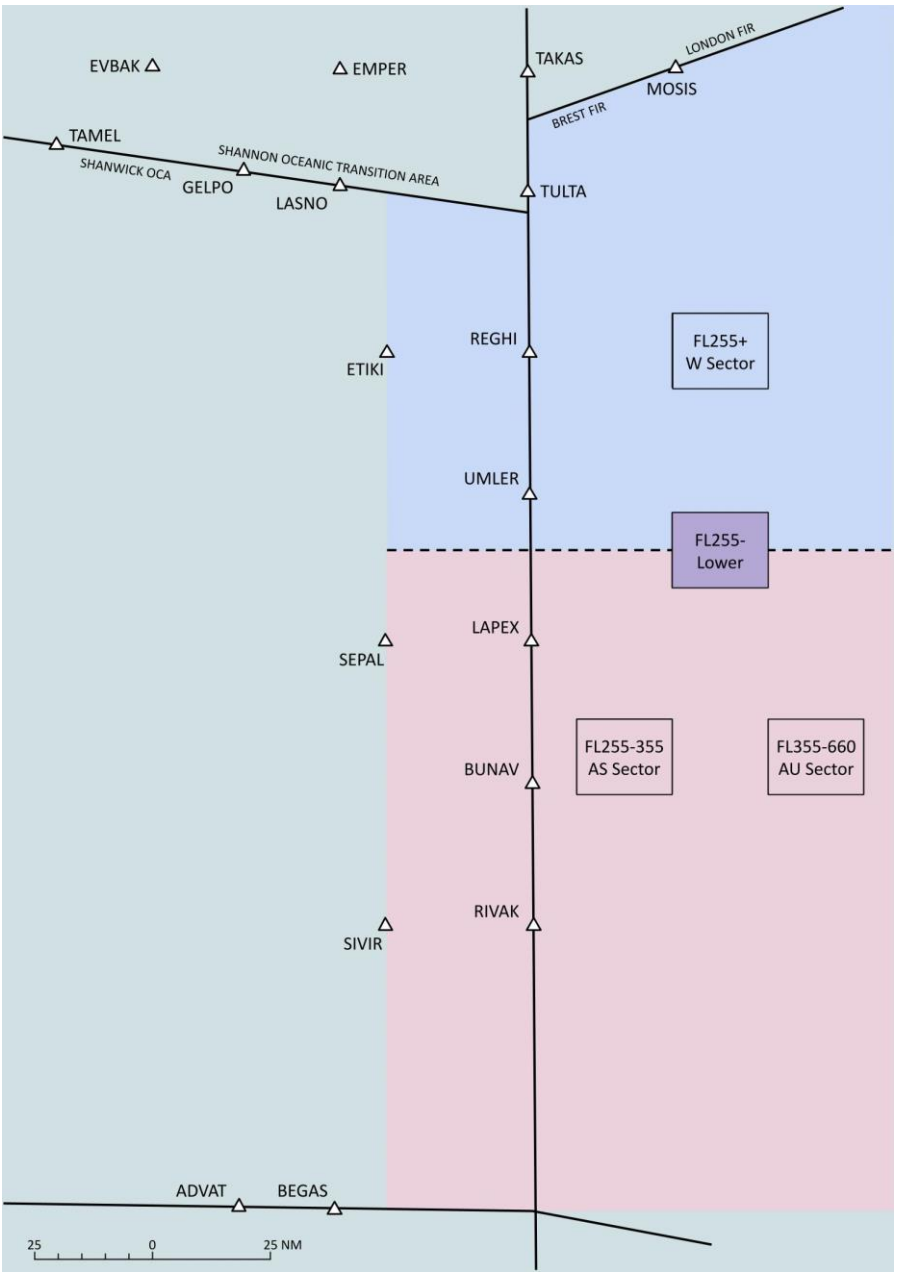
3.5 Brest ACC (LFRR)

Brest splits are defined in a "top-up" manner. The main bandbox sector covers airspace below FL255 and upper sectors are split off when required.

RTF Callsign	"Brest Control"
Equipment	Radar equipped
Lateral Separation Minima	5NM
Longitudinal Separation Minima	5NM
Special Transfer Conditions	None

Note: *Eurocontrol West (EURW_FSS) covers all French airspace above FL245 in the absence of local ATC.*

Figure 16 – Brest ACC Sectorisation



3.5.1 Brest W (FL255+) Sector

LFRR_W_CTR 127.850 MHz	**LFRR_CTR** 125.500 MHz

3.5.2 Brest Lower (SFC-FL255) Sector

LFRR_CTR 125.500 MHz

3.5.3 Brest AU (FL355-FL660) Sector

LFRR_A_CTR 131.275 MHz	**Brest AS (FL255-FL355) Sector**

3.5.4 Brest AS (FL255-FL355) Sector

LFRR_S_CTR 124.675 MHz	**LFRR_CTR** 125.500 MHz

3.6 Madrid ACC (LECM)

All handoffs to/from Madrid come from the West Sector which is split at FL245.

RTF Callsign	"Madrid Radar"
Equipment	Radar equipped
Lateral Separation Minima	5NM
Longitudinal Separation Minima	5NM
Special Transfer Conditions	None

Note: *Eurocontrol West (EURW_FSS) covers all French airspace above FL245 in the absence of local ATC*

3.6.1 Madrid W Upper (SFC-FL245) Sector

LECM_W_CTR 135.950 MHz	**LECM_N_CTR** 125.750 MHz	**LECM_M_CTR** 132.975 MHz	**LECM_U_CTR** 136.350 MHz	**LECM_CTR** 133.750 MHz

3.6.2 Madrid W Lower (FL245-FL660) Sector

LECM_W_CTR 135.950 MHz	**LECM_N_CTR** 125.750 MHz	**LECM_M_CTR** 132.975 MHz	**LECM_CTR** 133.750 MHz

GAN

SECTION 3
GANDER OCEANIC AREA CONTROL - GAN

GAN | GANDER OCEANIC AREA CONTROL

Chapter 1 General Operating Procedures

1.1 Gander Radio Positions

Gander Oceanic Control manages en-route traffic in the Gander OCA.

Designator	Relief	Coordination Name	VHF Alias Frequency	HF Frequency
NAT_FSS	NAT__FSS	*NAT Bandbox*	131.900	5.649
CZQO_CTR	CZQO__CTR	*Gander*	131.700	8.864
CZQO_A_CTR	CZQO_1_CTR	*Gander Alpha*	131.575	3.016
CZQO_B_CTR	CZQO_2_CTR	*Gander Bravo*	131.675	5.616
CZQO_C_CTR	CZQO_3_CTR	*Gander Charlie*	131.775	2.872
CZQO_D_CTR	CZQO_4_CTR	*Gander Delta*	131.875	4.675
CZQO_F_CTR	CZQO_5_CTR	*Gander Foxtrot*	131.975	13.291

1.2 Gander Delivery Positions

Gander Delivery provides oceanic clearance delivery for aircraft initially entering oceanic airspace in the Gander OCA.

Designator	Relief	Coordination Name	VHF Frequency
CZQO_DEL	CZQO__ DEL	*Gander Delivery*	128.700
CZQO_A_ DEL	CZQO_1_ DEL	*Gander Delivery Alpha*	119.425
CZQO_B_ DEL	CZQO_2_ DEL	*Gander Delivery Bravo*	135.050
CZQO_C_ DEL	CZQO_3_ DEL	*Gander Delivery Charlie*	128.450
CZQO_D_ DEL	CZQO_4_ DEL	*Gander Delivery Delta*	135.450
CZQO_F_ DEL	CZQO_5_ DEL	*Gander Delivery Foxtrot*	134.200

1.3 Radiotelephony Callsigns

All Gander positions use the radiotelephony callsign **"Gander Radio"**.

NAT Bandbox shall use the appropriate callsign for Shanwick or Gander, depending on the position of the aircraft.

1.4 Splitting Procedures

CZQO_CTR must be staffed before any other Gander position can be manned.

Due to the variable nature of the NAT routings, division of responsibility between controllers is not published. Splits which divide the OCAs north/south should be agreed between the relevant controllers and coordinated with adjacent sectors. It is also not uncommon for controllers to implement another split (e.g. Clearance, Track Controller).

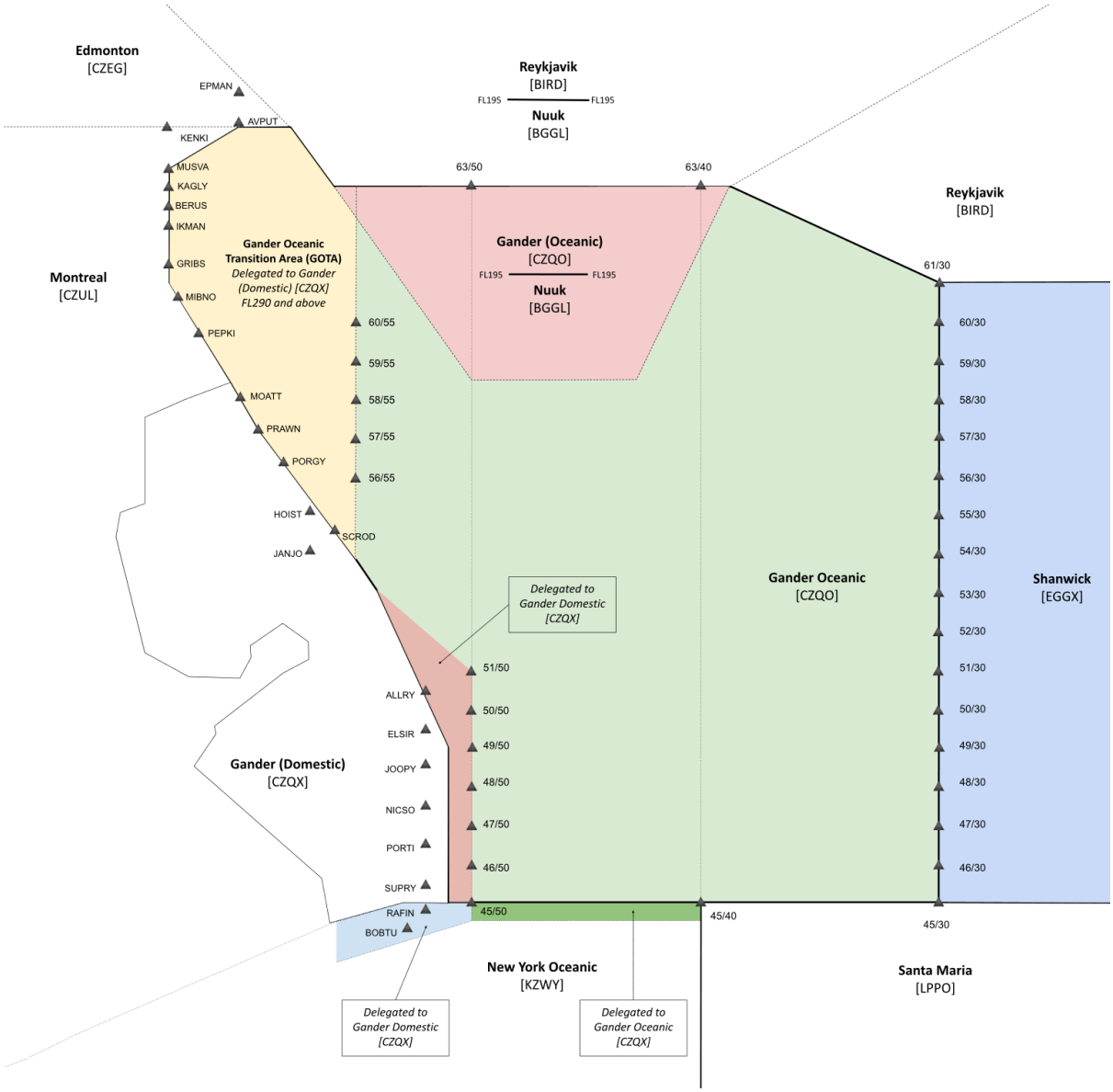
1.5 Extended Coverage

NAT_FSS covers the Shanwick and Gander OCAs when local ATC is offline.

Chapter 2 Area of Responsibility

The Gander Oceanic FIR forms a border with Shanwick at 030W, Santa Maria at 45N (between 030W and 040W) and New York Oceanic at 45N degrees north (between 040W and 051W). The FIR also forms borders with domestic FIR/UIRs including: Gander Domestic, Montreal, Edmonton and Nuuk. All airspace within the FIR is Class A from FL55 to UNL and is referred to as the Gander OCA (Oceanic Control Area). Airspace below FL55 is class G.

Figure 17 – Gander Oceanic Control Area



2.1 Gander Oceanic Transition Area (GOTA)

The Gander Oceanic Transition Area delegated to Gander (domestic) at FL90 and above. Refer to Gander (Domestic) ACC (CZQX) for more detail.

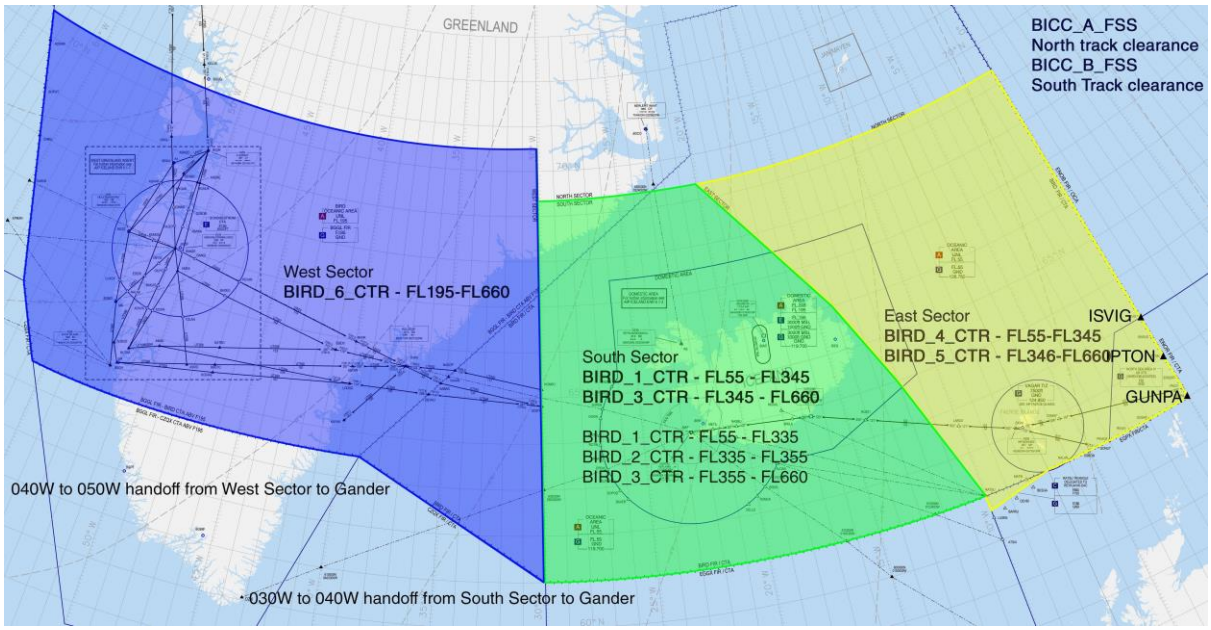
Chapter 3 Coordination and Procedures with Adjacent Sectors

3.1 Reykjavík ACC (BIRD)

Reykjavík provides a domestic radar service and borders the Northern edge of the Gander OCA.

RTF Callsign	"Reykjavik Control"
Equipment	Non-radar
Lateral Separation Minima	10NM at and above FL270, 5NM below FL270
Longitudinal Separation Minima	10NM at and above FL270, 5NM below FL270
Special Transfer Conditions	None

Figure 18 – Reykjavík ACC Sectorisation



Note: *BIRD_1_CTR is the bandbox position and covers all BIRD sectors top-down.*

3.1.1 West Sector

BIRD_6_CTR	**BIRD_1_CTR**
124.400 MHz	119.700 MHz

3.1.2 South Sector

Note: *The south sector can be dynamically split (vertically) according to demand, refer to the diagram for the correct sector.*

BIRD_1_CTR 119.700 MHz
BIRD_2_CTR 125.700 MHz
BIRD_3_CTR 128.600 MHz

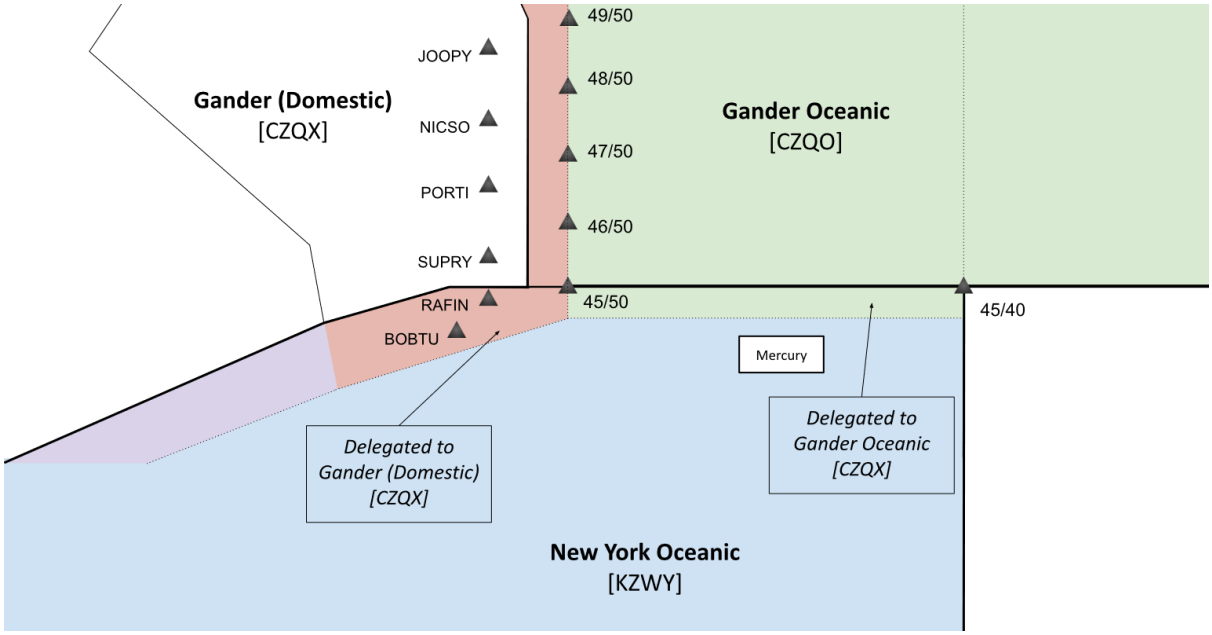
3.2 New York Oceanic ARTCC (KZWY)

New York Oceanic provides a procedural service augmented by ADS-C, with 15NM longitudinal and 30 NM lateral separation between eligible aircraft pairs. ZWY borders Gander to the South West between Gander Domestic and Santa Maria. All handoffs are to the Mercury Sector (21-24 on the diagram below).

New York delegates a rectangle of airspace to Gander Oceanic North of N45 30', between 40W and 50W up to the FIR boundary. New York also delegates another portion of airspace to Gander (domestic) to the west of this rectangle.

RTF Callsign	"New York Radio"
Equipment	Non-radar
Lateral Separation Minima	30NM
Longitudinal Separation Minima	30NM
Special Transfer Conditions	None

Figure 19 – New York Oceanic ARTCC Sectorisation



3.2.1 Mercury

NY_ML_FSS 17.946 MHz (*130.600 MHz)*	**NY_FSS** *(NY_CL_FSS)* 5.550 MHz (*130.000 MHz)*

3.2.2 Mercury High (FL365 - UNL)

The Mercury sector split is established at FL365 by default, but this level can be varied according to demand.

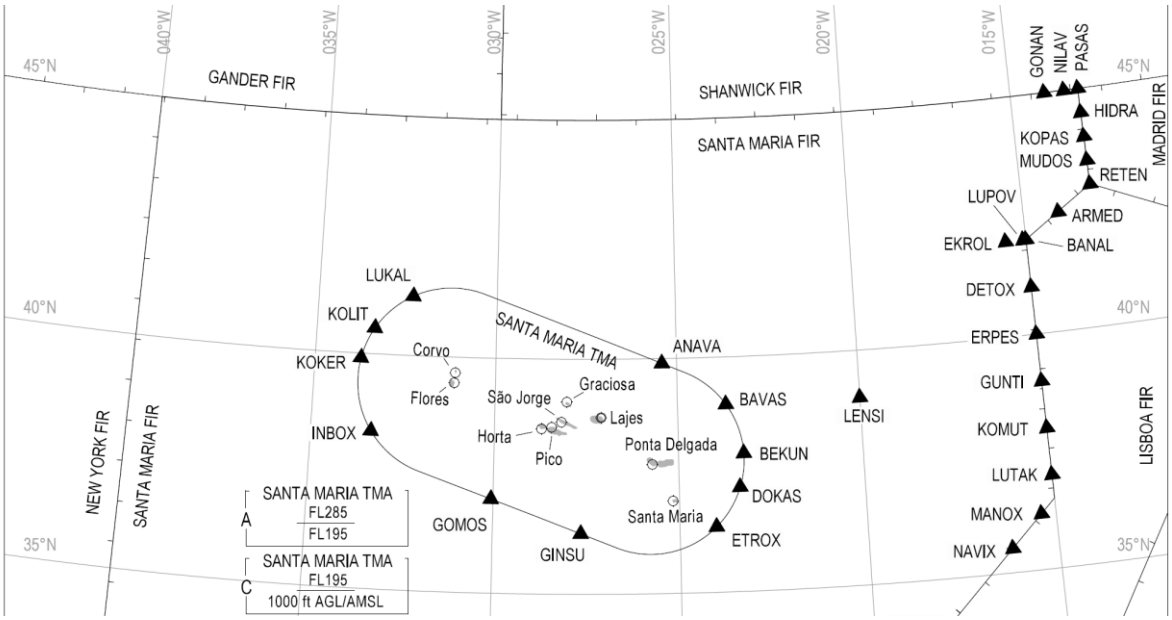
NY_MH_FSS 21.925 MHz (*130.650 MHz)*	**Mercury**

3.3 Santa Maria OAC (LPPO)

Santa Maria provides a mixture of radar and procedural services within their FIR. Radar stations at the Azores allow for a central area of radar coverage surrounded by procedurally controlled airspace which Gander borders. All handoffs are to the primary non-radar sector.

RTF Callsign	"Santa Maria Radio"
Equipment	Non-radar
Lateral Separation Minima	50NM
Longitudinal Separation Minima	10 Minutes
Special Transfer Conditions	None

Figure 20 – Santa Maria OAC Sectorisation



3.3.1 Non-radar Sector

LPPO_FSS 132.075 MHz

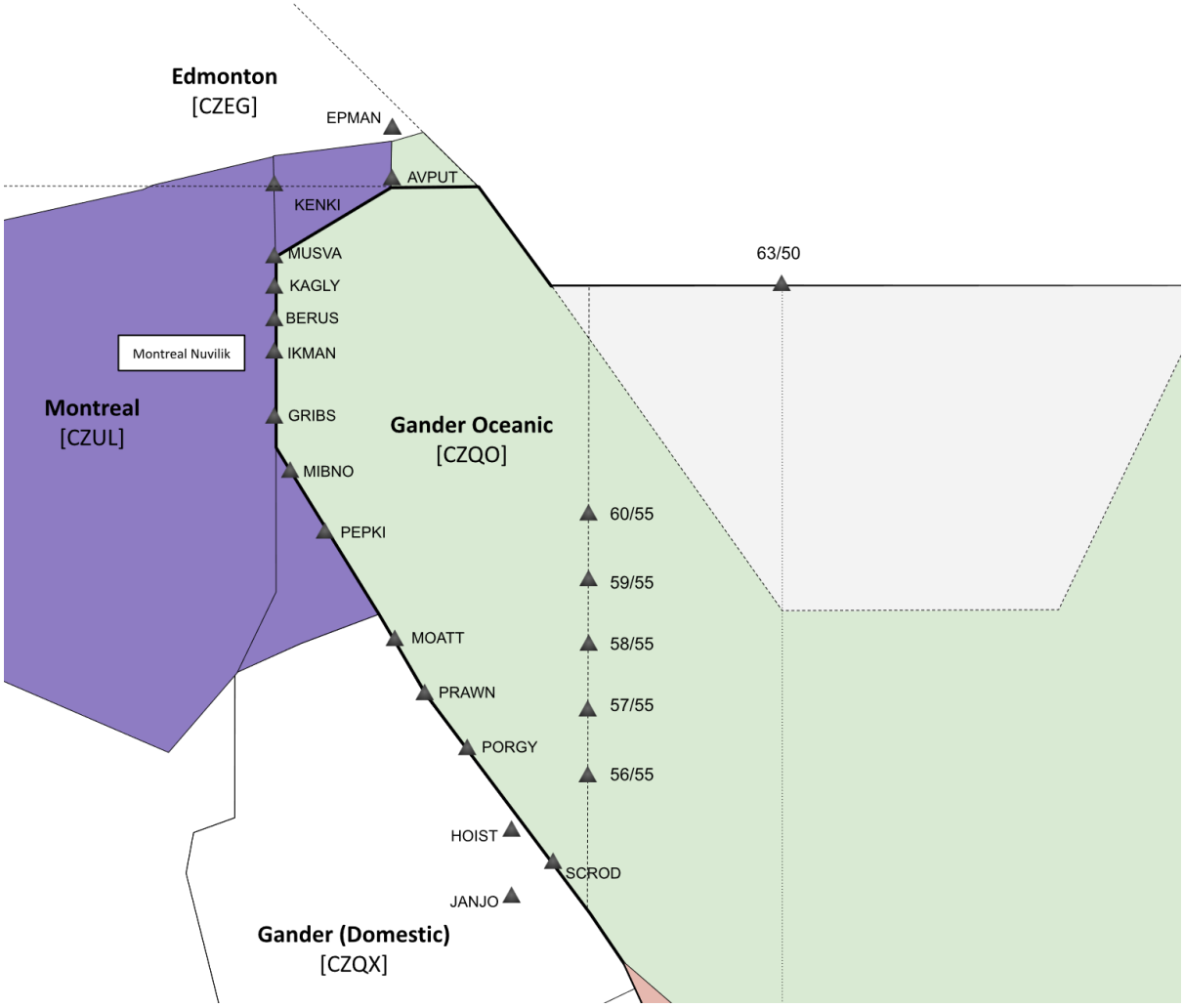
3.4 Montreal ACC (CZUL)

Montreal provides a domestic radar service. Sectors are split vertically at FL290, of which the lower sectors share boundaries with Gander Oceanic underneath the GOTA.

RTF Callsign	"Montreal Center"
Equipment	Radar equipped
Lateral Separation Minima	5NM
Longitudinal Separation Minima	5NM
Special Transfer Conditions	None

3.4.1 Montreal Sectorisation below FL290

Figure 21 – Montreal ACC Sectorisation Below FL290



3.4.2 Montreal Nuvilik

MTL_NK_CTR	MTL_BJ_CTR	MTL_HV_CTR	MTL_CTR
135.100 MHz	125.900 MHz	134.650 MHz	128.775 MHz

Note: *MTL_TH_CTR may be used instead of MTL_CTR when the sector is split*

3.5 Gander (Domestic) ACC (CZQX)

Gander (domestic) provides a domestic radar service.

Gander (domestic) is delegated the following areas by adjacent sectors:

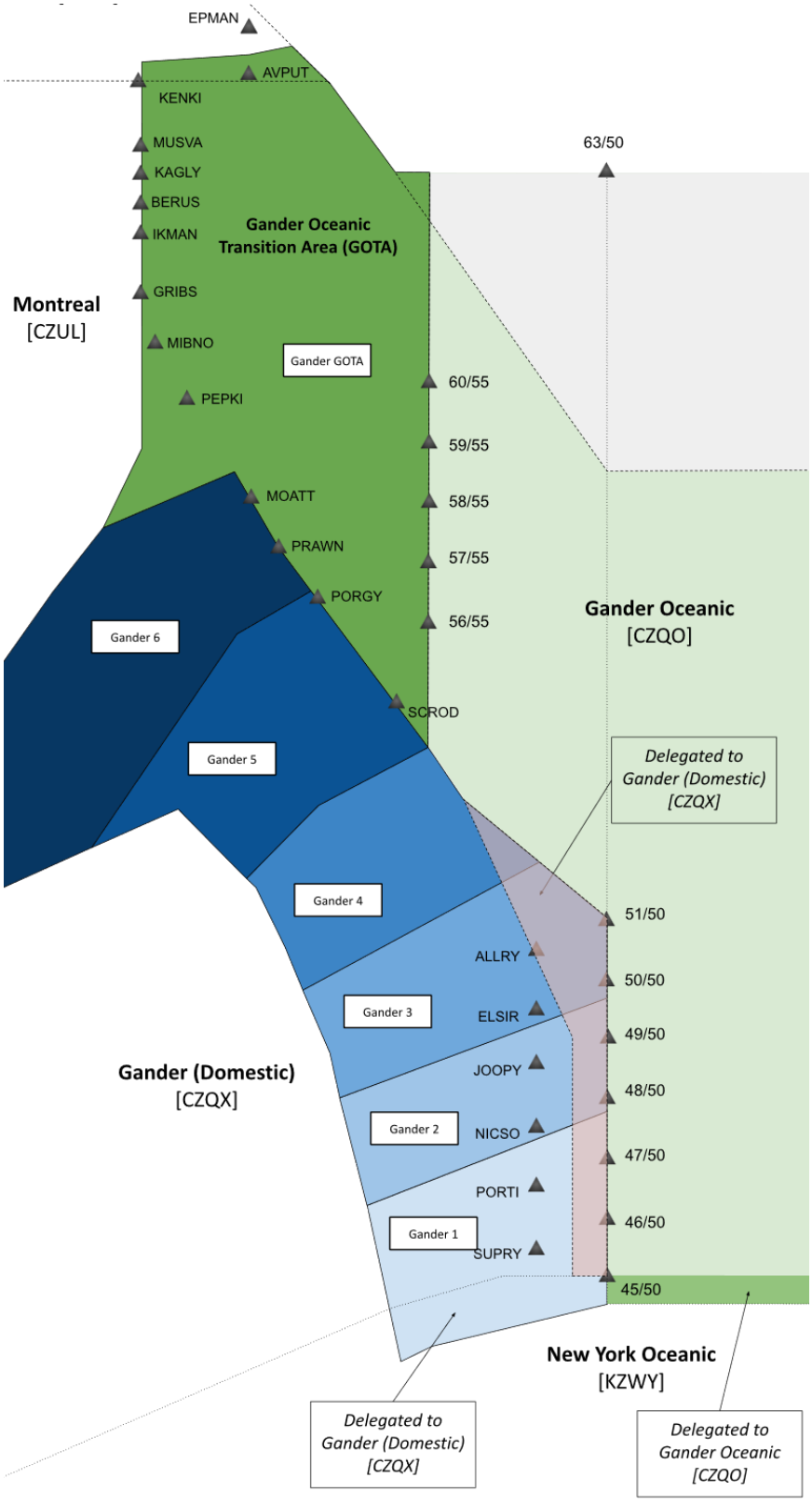
- The Gander Oceanic Transition Area (GOTA) at FL290 and above
- A small fillet of airspace west of 50W in the southwest corner of the Gander OCA by Gander Oceanic
- An area of airspace south of 45N and west of 50W by New York Oceanic.

When Gander is offline, its airspace is covered top-down by Moncton Center.

RTF Callsign	"Gander Center" for CZQX, "Moncton Center" for CZQM
Equipment	Radar equipped
Lateral Separation Minima	5NM
Longitudinal Separation Minima	5NM
Special Transfer Conditions	None

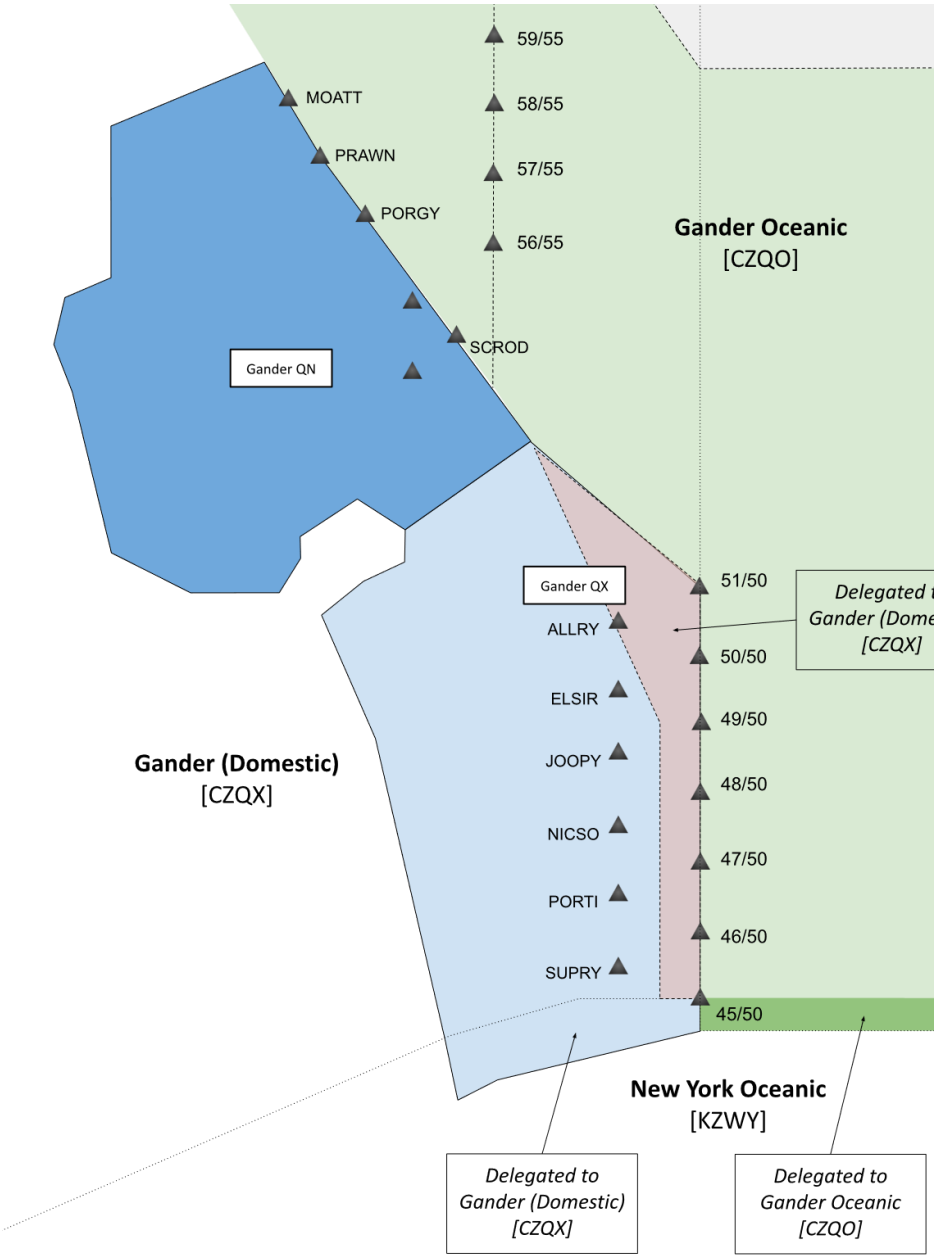
3.5.1 Gander (Domestic) Sectorisation FL290 and Above

Figure 22 – Gander (Domestic) ACC Sectorisation FL290 and Above



3.5.2 Gander (Domestic) Sectorisation below FL290

Figure 23 – Gander (Domestic) ACC Sectorisation Below FL290



3.5.3 All Gander Sectors

CZQX_CTR 132.100 MHz	**CZQM_CTR** 132.200 MHz

ANX

SECTION 4
ANNEXES

ANNEX A | HF PHRASEOLOGY

The following guidance is provided to highlight differences between domestic and oceanic phraseology. It is intended to complement phraseology examples in the North Atlantic Operations and Airspace Manual (NAT Doc 007).

1.1 General

Component	Standard Radiotelephony
Airports & ICAO Codes	Individual phonetic letters, e.g. TBPB – "tango bravo papa bravo" *or* unique airport name, e.g. EGAA - "Belfast Aldergrove"
Mach Number	"Mach decimal eight-five"
Times/Numbers	Individual numbers, e.g. 1330 - "one three three zero"
NAT Track	Phonetic letters e.g. Track A – "track alpha"
Latitudes	2 individual digits e.g. 51N – "five one north"
Longitudes	2 or 3 individual digits e.g. 030W – "(zero) three zero west"

1.2 Oceanic Clearance

General Notes

- If the NAT Track is the same one specified in the flight plan, it is not required to be stated in the request. If it is not, pilots will add the phrase "now requesting track __".
- Pilots may optionally add the phrase "second choice track __".
- Maximum flight level may be the same as the requested level.
- If the clearance is not as requested, the pilot must be informed using the phrase "oceanic clearance with a _____ change". Refer to Changes to Requested Clearance.
- Whilst providing an oceanic clearance, aircraft are often still in domestic airspace where the oceanic controller is not the controlling authority.
- The callsign "Shanwick (or Gander) Oceanic" is included in the clearance to indicate the clearance came from the controlling authority.
- Controllers should not provide the TMI in the clearance but should ensure the pilot provides it in the readback. TMI is not required from aircraft on a random routing.
- Concorde phraseology is different.

1.2.1 Via NAT Tracks

- This clearance example includes a level change from the originally requested level.

	Shanwick Radio, ACA849, request oceanic clearance
	ACA849, Shanwick Radio
	ACA849, request oceanic clearance; estimating ETARI at 1154, request M080, FL360, able FL370
	ACA849, Shanwick Radio, roger, standby for oceanic clearance
A short delay is reasonable to check the requested clearance for conflicts	

	ACA849, Shanwick Radio, oceanic clearance with a level change"
	ACA849
	Shanwick Oceanic clears ACA849 to CYYT via track A, From ETARI maintain FL370, M080.
	ACA849 is cleared to CYYT via track A. From ETARI maintain FL370, M080, TMI 071.
	ACA849 correct, return to domestic frequency.

1.2.2 Via Random Route

	Shanwick Radio, TOM124, request oceanic clearance
	TOM124, Shanwick Radio
	TOM124, request oceanic clearance, estimating DINIM at 1024, request M085, FL400, able FL410
	TOM124, roger, standby for oceanic clearance
A short delay is reasonable to check the requested clearance for conflicts	
	TOM124, Shanwick Radio, oceanic clearance.
	TOM124
	Shanwick Oceanic clears TOM124 to TBPB via DINIM 49N020W, 44N030W, 36N040W, 31N045W, 25N050W, FISST. From DINIM maintain FL400, M085.
	TOM124 is cleared to TBPB via DINIM 49N020W, 44N030W, 36N040W, 31N045W, 25N050W, FISST. From DINIM maintain FL400, M085.
	TOM124, correct, return to domestic frequency

1.2.3 Changes to Requested Clearance

Amendment Phraseology	Description
Re-route	Change, deletion or addition of a waypoint other than the entry point.
Level Change	Level in the clearance is not the same as the requested level
Speed Change	Speed in the clearance is not the same as the requested speed
Entry Point Change	Change of oceanic entry point
Clearance Limit Change	Change of clearance limit

1.2.4 Time Restrictions

- Time restrictions should not be applied unless required for separation. They should be appended to the oceanic clearance and must be read back, but may be issued separately.

	...cross ETARI not later than time 1155
	...cross ETARI not before time 1155

1.3 Initial Check in with Oceanic Controller

1.3.1 ADS-B Equipped Aircraft

General Notes

- When requesting a SELCAL check, pilots are not required to state the SELCAL code.
- Frequencies for the next sector may be provided on first contact, although the risk of the pilot incorrectly changing frequency immediately must be considered. If required, this can be delayed to a separate transmission closer to the next sector boundary.
- The phrase "monitor this frequency" can be used to highlight the requirement to maintain a listening watch on the current frequency prior to contacting the next sector.
- Aircraft that are not ADS-B equipped will check in with a position report and request for SELCAL check. After the last position report in the current sector is received, contact details for the next sector shall be provided.

	Shanwick Radio, TOM124, Santa Maria next, request SELCAL check.
	TOM124, Shanwick Radio, [at 45N contact Santa Maria on 132.075], standby for SELCAL check.
Selcal tone triggered	
	TOM124, SELCAL check OK.
	Shanwick Radio.

1.3.2 Non-ADS-B Equipped Aircraft (Position Reports)

General Notes

- Aircraft that are not ADS-B equipped will check in with a position report and request for SELCAL check, followed by position reports passing each waypoint.
- After the last position report in the current sector is received, contact details for the next sector shall be provided.
- Pilots are not required to include their current/cleared Mach number in a position report, unless a speed change (via an amended clearance) has occurred since the previous position report

	Shanwick, TOM124, position.
	TOM124, Shanwick Radio
	TOM124, DINIM at 1025, FL400, estimating 49N020W at 1131, next 44N030W.
	TOM124, [reads back position report].

1.4 Revisions/Amendments

General Notes

- Instructions to report leaving or report reaching are optional and should be appended to the climb instruction if required.
- Amended clearances may include a geographic or time restriction whereby the instruction may only be commenced after a certain point/time or alternatively must be complied with prior to a certain point/time.
- The same format is used for speed/route changes, with the phraseology "Amended speed/route clearance…"

	ACA849, Gander Radio, amended level clearance
	ACA849
	Gander Oceanic clears ACA849, climb to and maintain FL430.
	ACA849, climb to and maintain FL430.
	ACA849, correct.

1.4.1 Operations Without A Fixed Speed (OWAFS)

General Notes

- Refer to OWAFS

	EIN155, Shanwick Radio, amended speed clearance.
	EIN155
	Shanwick Oceanic clears EIN155, resume normal speed.
	EIN155, Resume normal speed
	EIN155, correct

1.4.2 Revised Estimate

General Notes

- If the ETA for any waypoint changes by more than 3 minutes, aircraft must provide a revised estimate.

	Gander Radio, ACA849, revised estimate.
	ACA849, Gander Radio
	ACA849 estimating 5140N at 1334
	ACA849, Gander Radio copies estimating 5140N at 1334.

1.5 Handoff

General Notes

- For radio stations, use “call”
- For control stations, use “contact”

	EIN104, over 30W, call Shanwick Radio 131.800
	EIN106, over 50W, contact Moncton Center 132.200

ANNEX B | CONCORDE PROCEDURES

Due to the unique nature of Concorde operations, separation procedures and phraseology can be abbreviated to take advantage of the relative lack of conflicting traffic.

1.1 Concorde Separation Standards

1.1.1 Vertical Separation - Concorde Cruise Climb

There are no changes to standard vertical separation minima.

Concorde aircraft undertake a 'cruise climb' at supersonic speeds. As fuel is burnt, Concorde aircraft are able to climb slowly as they become lighter, whilst maintaining a constant speed. This equates to a constant climb rate of approximately 50 feet per minute.

All Concorde aircraft cruise climb from **FL470-FL600 in the NAT HLA, therefore standard oceanic clearances for Concorde do not re-state this**. This standard cruise climb is separated from all traffic operating at and below FL430.

In the unlikely event that another, non-Concorde aircraft is transiting the OCA above FL430 on a conflicting route, it may be necessary to assign specific levels for cruise climb in the oceanic clearance to Concorde to ensure separation. Cruise climbing from FL490-600 is normally achievable, which ensures separation from traffic operating at and below FL450.

Note: *As the level clearance is a cruise climb, not a level block, lower levels will become progressively available to other traffic as the Concorde transits the OCA.*

1.1.2 Lateral Separation - Concorde Tracks

Four legacy tracks are utilised for the purpose of Concorde flights.

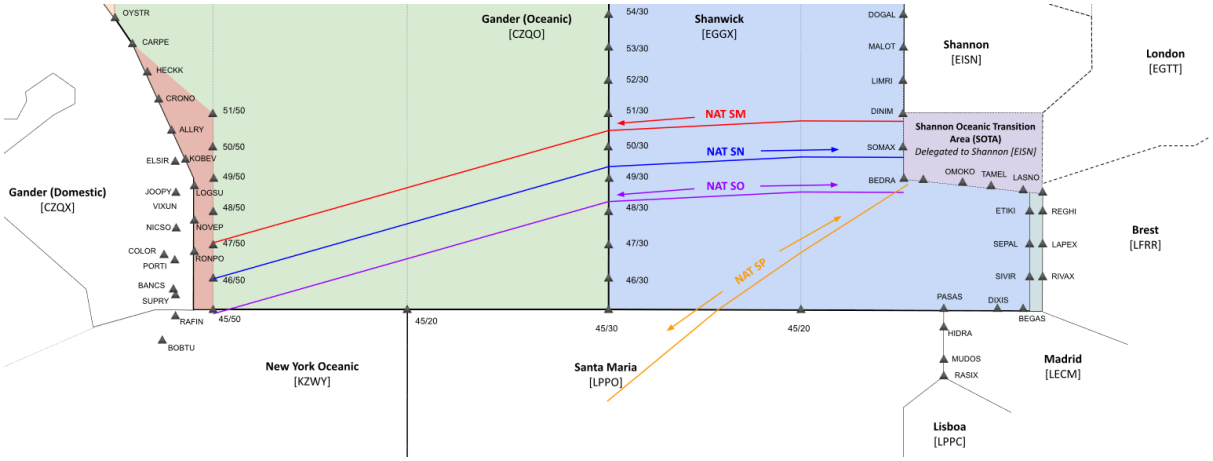
Concorde tracks are named NAT SM, NAT SN, NAT SO & NAT SP.

- SM: "Sierra Mike" for westbound flight only
- SN: "Sierra November" for eastbound flight only
- SO: "Sierra Oscar" overflow of supersonic traffic, as coordinated/cleared by ATC.
- SP: "Sierra Papa" bi-directional route to Caribbean

These tracks route via intermediate latitudes (i.e. degrees and minutes). For this reason, points on track are commonly abbreviated to the track name and their longitude.
For example, Track SM is defined as the following points (with abbreviated names):

- 50° 41'N 15°W "Sierra Mike 15 West"
- 50° 50'N 20°W "Sierra Mike 20 West" etc.

Figure 24 – Concorde Tracks



Note: *Supersonic flight on Concorde tracks is separated from flights via other Concorde tracks.*

1.1.2.1 NAT-SM (Westbound) Waypoints

SM15W (50.41N 15.00W) SM20W (50.50N 20.00W) SM30W (50.30N 30.00W)
SM40W (49.16N 40.00W) SM50W (47.03N 50.00W) SM53W (46.10N 53.00W)
SM60W (44.14N 60.00W) SM65W (42.46N 65.00W) SM67W (42.00N 67.00W)

1.1.2.2 NAT-SN (Eastbound) Waypoints

SN67W (40.25N 67.00W) SN65W (41.40N 65.00W) SN60W (43.07N 60.00W)
SN52W (45.10N 52.30W) SN50W (45.54N 50.00W) SN40W (48.10N 40.00W)
SN30W (49.26N 30.00W) SN20W (49.49N 20.00W) SN15W (49.41N 15.00W)

1.1.2.3 NAT-SO (Alternate) Waypoints

SO15W (48.40N 15.00W) SO20W (48.48N 20.00W) SO30W (48.22N 30.00W)
SO40W (47.04N 40.00W) SO50W (44.45N 50.00W) SO52W (44.10N 52.00W)
SO60W (42.00N 60.00W)

1.1.2.4 NAT-SP (Caribbean) Waypoints

SP15W (48.49N 14.43W) SP20W (46.49N 20.00W) SP45N (45.00N 23.53W)
SP30W (41.36N 30.00W) SP40W (34.22N 40.00W)

1.1.3 Longitudinal Separation

Apply standard longitudinal separation minima for 'other aircraft' (non-ADS-B equipped).

All Concorde aircraft operate a standard speed schedule on transatlantic routes, cruise climbing at approximately M2.00, meaningful deviation from this speed is not possible. Only Concorde aircraft operate on these tracks at the standard level block so it is not necessary to specify an assigned speed (Mach number) in the oceanic clearance.

1.1.4 London Heathrow (EGLL) Departures

Oceanic clearance for Concorde aircraft departing London Heathrow (EGLL) on the standard oceanic Concorde tracks is coordinated by the controller covering the Heathrow Delivery function (when online). The Heathrow controller will pass the time estimate for 15W to the Shanwick Delivery controller (normally via text), who will pass back any time restrictions for 15W.

If any delays occur whilst airborne, it is possible that the Concorde will not be able to reach its destination. This coordination method allows delays to be absorbed on the ground. Heathrow will manage the departure to ensure the aircraft can achieve any time restriction at 15W.

	**EGLL_DEL:** BAW1, Concorde, Track SM, Estimating 15W at 1110.
	**EGGX_DEL:** BAW1, Track SM, [no restrictions] / [cross 15W not before time 1119] / [cross 15W no later than time 1116]

Note: *It is advised that Shanwick does not pass a "no later than" time restriction to Heathrow, unless this time is at least 5 minutes after the original 15W estimate. This is to minimise the chance of unanticipated ground delays resulting in an airborne conflict.*

Note: *Concorde aircraft that have been coordinated by Heathrow have received an oceanic clearance and are not required to obtain an oceanic clearance directly from Shanwick. The first direct contact with Shanwick will be at 15W for a position report.*

1.2 Concorde Phraseology

1.2.1 Oceanic Clearance

General Notes

- All Concorde aircraft entering the OCA require an oceanic clearance. Due to the standard speed profile and level block, only longitudinal separation against other Concorde aircraft needs to be considered. The Concorde phraseology is therefore succinct.
- The levels for a cruise climb are **not** normally stated. If required to ensure separation against other high-level traffic, append the cruise climb levels to the clearance example using the phraseology: "…cruise climb FL490-600" .
- Concorde aircraft departing London Heathrow (EGLL) whose time estimate for 15W has been coordinated with Heathrow delivery are not required to contact Shanwick directly for an oceanic clearance.

	Shanwick Radio, BAW1, request oceanic clearance
	BAW1, Shanwick Radio
	BAW1, request oceanic clearance; estimating SM15W at 1154
	BAW1, Shanwick Radio, roger, standby for oceanic clearance
A short delay is reasonable to check the requested clearance for conflicts	

	BAW1, Shanwick Radio, oceanic clearance”
	BAW1
	Shanwick Oceanic clears BAW1 to KJFK, standard route via track SM.
	BAW1 is cleared to KJFK, standard route via track SM
	BAW1 correct, return to domestic frequency.

1.2.2 Position Reports

General Notes

- Position reports should be made at oceanic entry and exit points and at 20W, 30W, 40W, 50W and 60W.
- At 20W, 40W and 60W only position and time is required.
- Flight Levels should be provided to the nearest 100ft e.g. FL554.

	Shanwick, BAW1, position.
	BAW1, Shanwick Radio.
	BAW1, SM15W at 1025, FL557, estimating SM20W at 1042, next SM30W.
	BAW1, [reads back position report].

Glossary

Abbreviation	Meaning
(v)MATS	(Virtual) Manual of Air Traffic Services
AC	Area Control
ACC	Area Control Centre
ATA	Actual Time of Arrival
ATCC	Air Traffic Control Centre
ATCO	Air Traffic Control Officer
ATD	Actual Time of Departure
ATS	Air Traffic Service
COP	Coordination Point
COPN	Coordination Entry Point
COPX	Coordination Exit Point
EAT	Expected Approach Time
ES	EuroScope
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FIR	Flight Information Region
FIS	Flight Information Service
FL	Flight Level
Ft	Foot (feet)
GS	Groundspeed
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organisation
Kts	Knots
LoA	Letter of Agreement
MHz	Megahertz
NAT	North Atlantic
NTM	NAT Track Message
NM	Nautical Mile
OAC	Oceanic Area Control Centre
OCA	Oceanic Control Area
OEP	Oceanic Entry Point
OTS	Organised Track System
PBCS	Performance Based Communication and Surveillance
RFC	Released for Climb
RFD	Released for Descent
RFL	Requested Flight Level
RFT	Released for Turn
ScAC	Scottish Area Control
SIGMET	Information concerning en-route weather phenomena which may affect safety of aircraft operation
SSR	Secondary Surveillance Radar
TAS	True Airspeed
TL	Transition Level
TMI	Track Message Identifier
UIR	Upper Information Region
XFL	Exit Flight Level